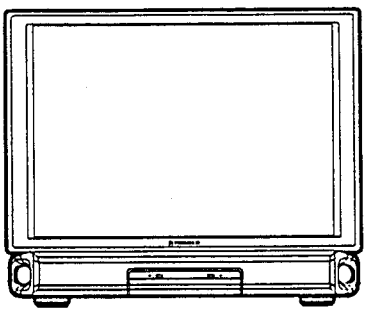
Service Manual

PIONEER®
The Art of Entertainment



ORDER NO.
ARP2831

PROJECTION MONITOR RECEIVER

SD-M1407

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	SD-M1407		
WL	O	AC220 – 240V	

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IFI OCT. 199 Printed in Japan

1. SAFETY PRECAUTIONS

NOTICE : Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.

The following precautions should be observed:

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled.
   Keep picture tube away from the body while handling.
2. When service is required, even though the SD-M1407 an isolation transformer should be inserted between power line and the set in safety before any service is performed.
3. When replacing a chassis in the set, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment covershields, isolation resistor-capacitor, etc.
4. When service is required, observe the original lead dress.
   Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacture's.
   Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced set to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the set by the manufacturer has become defective, or inadvertently defeated during servicing.

Therefore, the following checks should be performed for the continued protection of the customer and service technician.

High Voltage

This set is provided with a X-ray protection for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this X-ray protection may correctly be operated.

Serviceman Warning

In the status of the black picture (video muting is being applied) when no signal is input, high voltage of this set during operation is less than 31.4kV. In case any component having some relation to the high voltage is replaced, confirm that the high voltage is lower than 31.4kV in the status of the black picture when no signal is input.

X-radiation

TUBE : The primary source of X-radiation in this set is the picture tube.

For continued X-radiation protection, the replacement tube must be the same type as the original, PIONEER approved type.

The picture tube (CRT Assy R, G, B) used in this set holds complete guarantee against X-ray radiation when the X-ray is sealed (See on page 4). Accordingly, when the current in flowing to the picture tube (CRT Assy R, G, B), be sure to perform it by putting the tube into X-ray sealed applied state. Avoid absolutely to flow the current to the picture tube (CRT Assy R, G, B) itself. Moreover, when the voltage of the high voltage circuit becomes abnormally a little higher, the picture tube radiates X-rays. Accordingly, when servicing the high voltage circuit be sure to replace as an Assy with the VIDEO-DEFLECTION Assy in the manner in which has been adjusted to perform normal operation.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in PIONEER set have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

3. CHARGED SECTION, HIGH VOLTAGE GENERATING POINT AND X-RAY PROTECTION

■ Charged section

The circuit in which the commercial AC power is used as it is without passing through the power supply transformer. If the charged section is touched, there is a risk of electric shock. In addition, the measuring equipment can be damaged if it is connected to the GND of the charged section and the GND of the non-charged section while connecting the set directly to the commercial AC power supply. In this case, be sure to connect the set via an insulated transformer and supply the current.

■ Charged section (Power supply primary side)

1. The primary side of the POWER SUPPLY-HIGH VOLTAGE Assy
2. AC power cords
3. AC inlet
4. The primary side of the AC INPUT Assy
5. ELECTROLYTIC CAPACITOR Assy

part is the charged section.

part is the high voltage generating points other than the charged section.

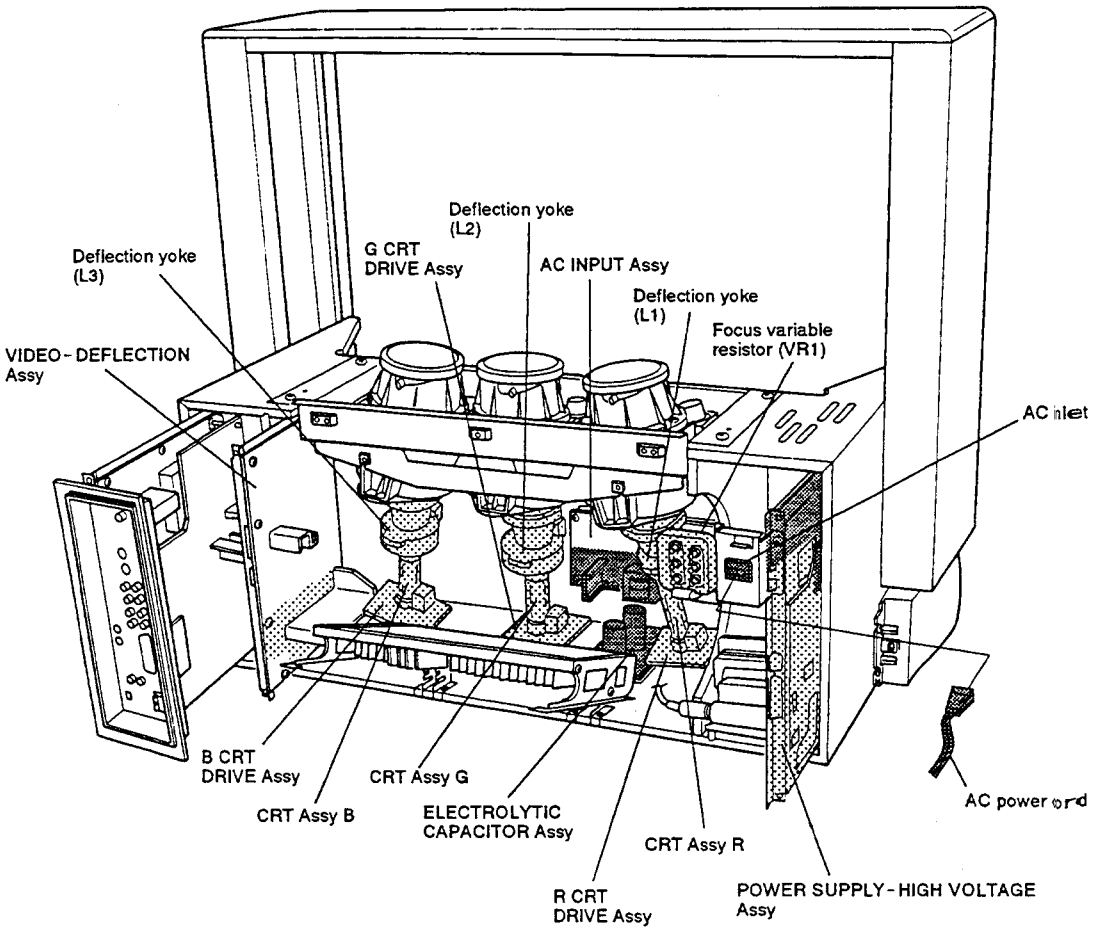


Fig. 3-1 Charged section and high voltage generating point

■ High voltage generating point

The place where voltage of over 100V is generated.

1. Charged section
2. POWER SUPPLY - HIGH VOLTAGE Assy (including FBT) (31.0kV, 135V)
3. R CRT DRIVE Assy (10.5kV)
4. G CRT DRIVE Assy (10.5kV)
5. B CRT DRIVE Assy (10.5kV)
6. CRT Assy R (31.0kV)
7. CRT Assy G (31.0kV)
8. CRT Assy B (31.0kV)
9. Focus variable resistor (10.5kV)
10. Deflection yokes (L1, L2, and L3) (Approx. 1100V at peak)
11. VIDEO - DEFLECTION Assy (Deflection section) (Approx. 1300V at peak)

■ X-ray protection

- Regarding the parts which are relative to radiation of X-rays (There is the danger to radiate X-ray from the individual CRT Assy R, G, B), there are notifications of caution in the individual schematic diagrams. Be sure to read them for safety's sake.
- The component parts for X-ray protection are as follows : When the current flows to the CRT Assy R, G, B, be sure to perform it with these parts being attached. Protection from the X-ray radiation is maintained in the state in which these parts have been installed to the CRT Assy R, G, B. Accordingly, never supply current only to the CRT Assy R, G, B.
  Moreover, the anode voltage of the CRT Assy R, G, B should always be kept not higher than the predetermined value (in the minimum brightness and picture state when non signal input is higher than 31.4kV). Be sure to drive the CRT Assy R, G, B by using a completely functional POWER SUPPLY - HIGH VOLTAGE Assy which has been adjusted completely in the combined state. (When the voltage abnormally becomes high, the X-ray protection circuit will operate.)

1. CRT Assy R, G, B (Do not dismantle CRT assemblies under any circumstances).
2. Lens Assy (R), (G), (B)

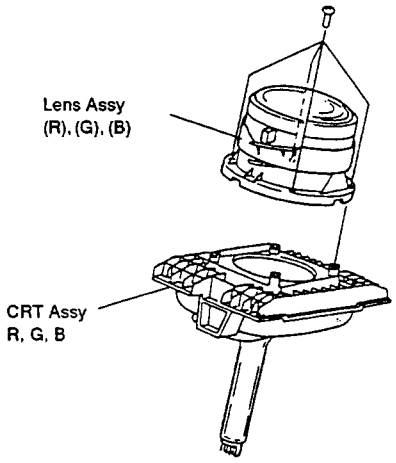


Fig. 3-2 Component parts for X-ray protection

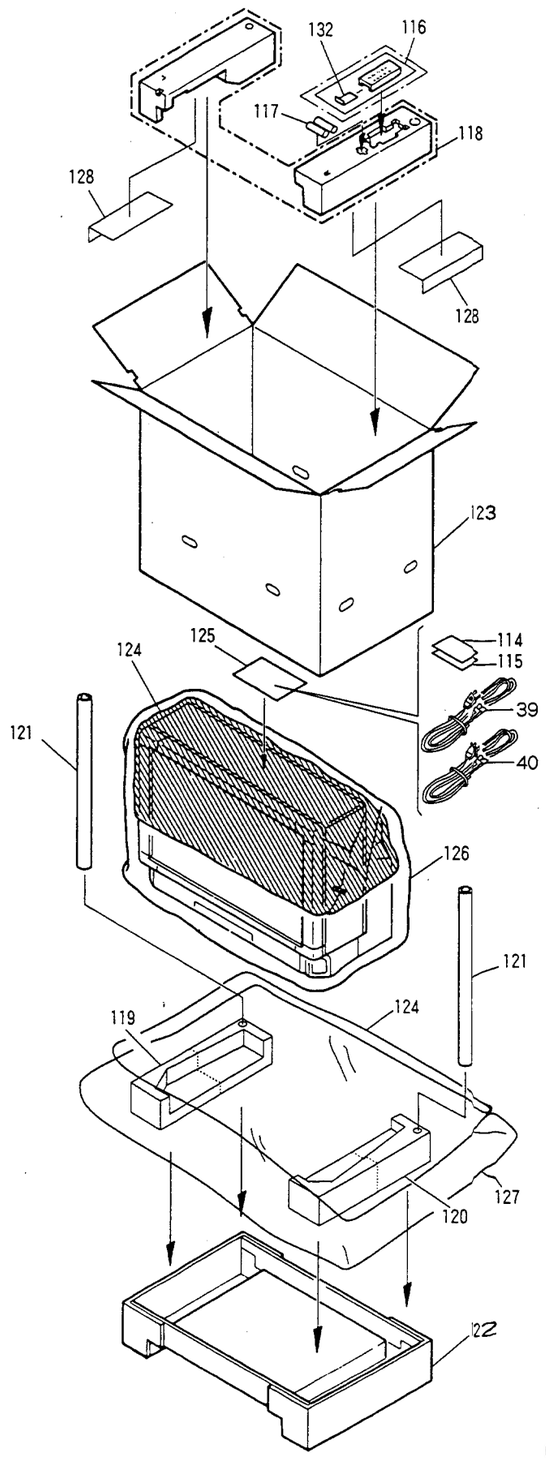
4. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *Parts marked by ☆ are important parts which relate to X-rays radiation.*
  If any of these parts need to be replaced, always replace with specified parts.

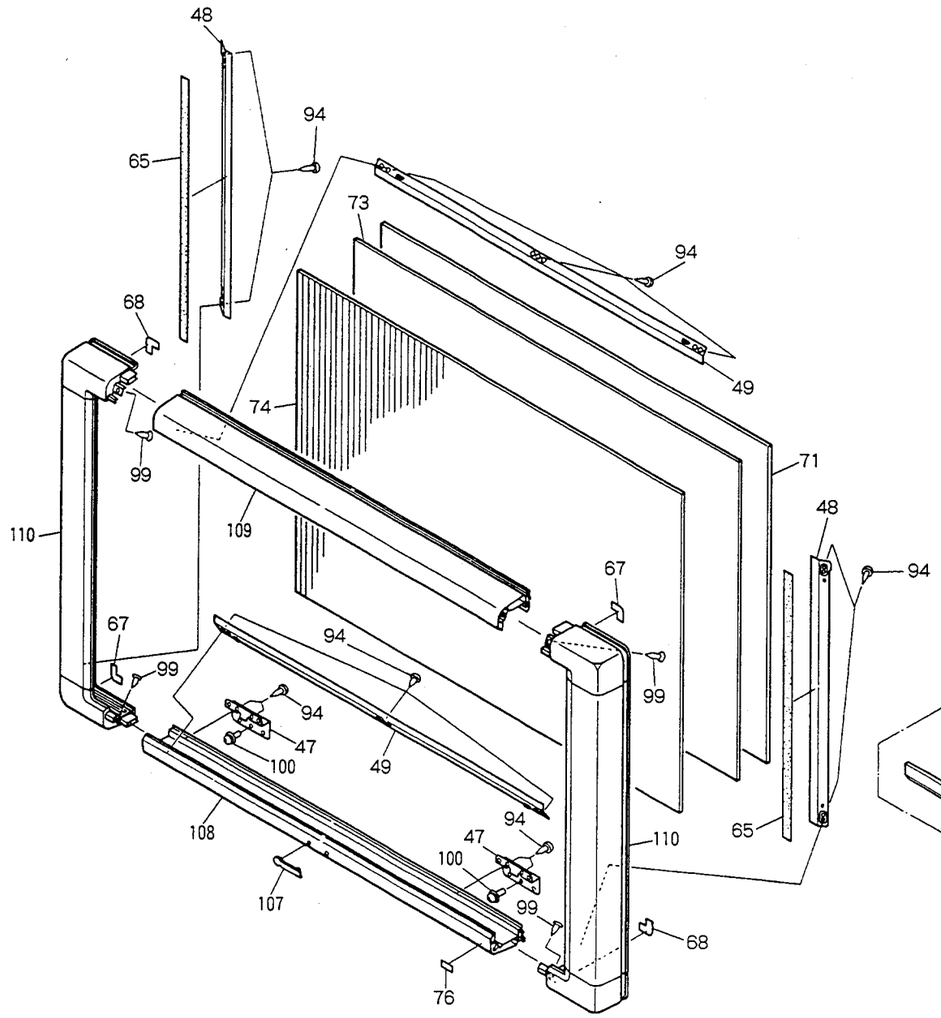
4.1 PARTS LIST

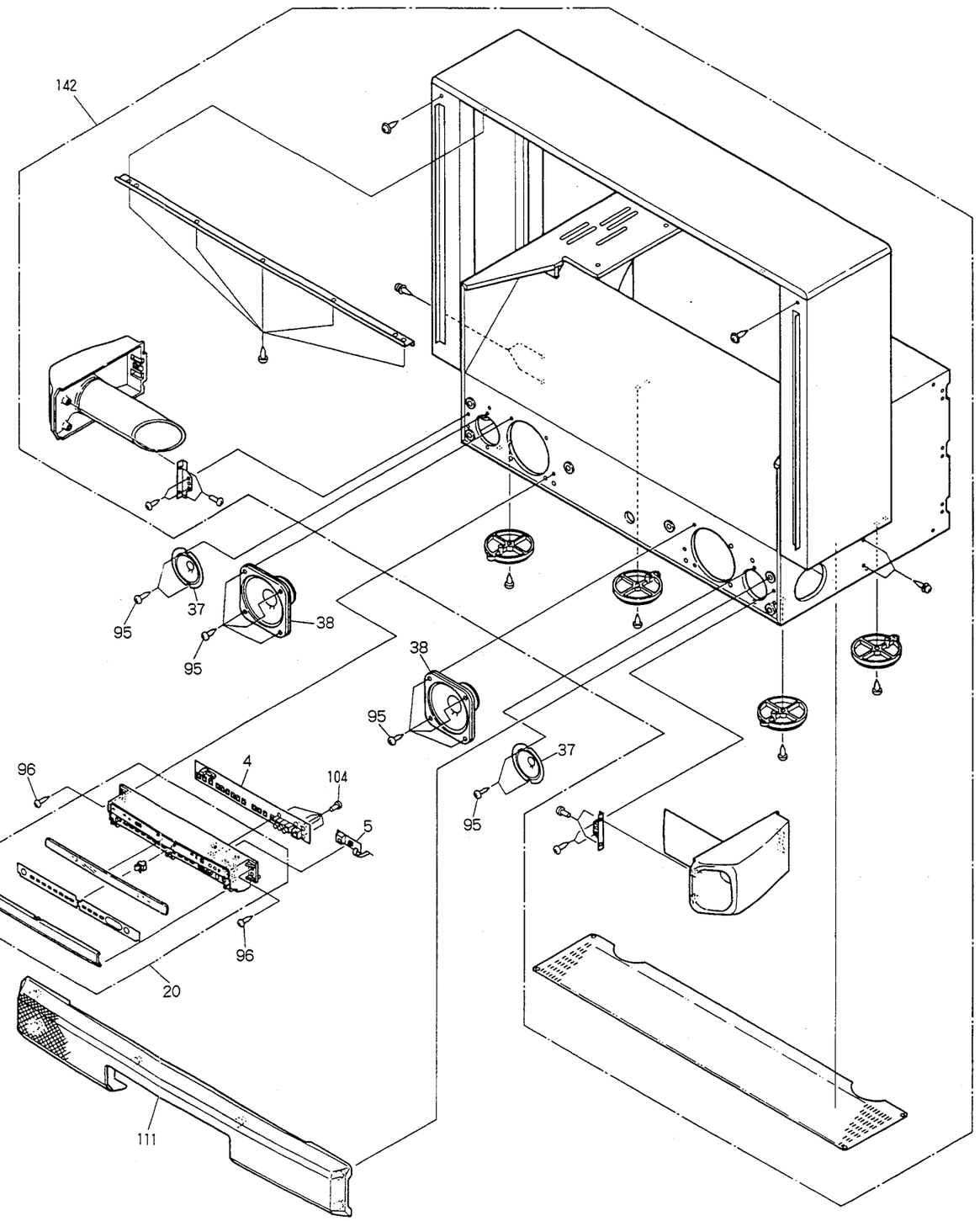
Mark	No.	Description	Part No.
	1	TUNER-UCOM ASSY	AWV1385
☆	2	POWER SUPPLY-HIGH VOLTAGE ASSY	AWV1386
	3	AC INPUT ASSY	AWZ5266
	4	FRONT CONTROL ASSY	AWZ5267
	5	RECEIVER ASSY	AWZ5268
	6	R CRT DRIVE ASSY	AWZ5269
	7	G CRT DRIVE ASSY	AWZ5270
	8	B CRT DRIVE ASSY	AWZ5271
	9	ELECTROLYTIC CAPACITOR ASSY	AWZ5276
	10	CONVERGENCE-AUDIO AMP ASSY	AWV1388
	11	CONVERGENCE GH ASSY	AWZ4500
	12	CONVERGENCE H1 ASSY	AWZ4501
	13	CONVERGENCE H2 ASSY	AWZ4502
	14	CONVERGENCE V1 ASSY	AWZ4503
	15	CONVERGENCE V2 ASSY	AWZ4504
	16	CONVERGENCE V3 ASSY	AWZ4505
☆	17	VIDEO-DEFLECTION ASSY	AWV1389
	18	I/O-TEXT-Y/C ASSY	AWZ5272
	19	AV-2 ASSY	AWZ5273
	20	FRONT PANEL ASSY	AMB2189
⚠	21	FOCUS VR(VR1)	ACX1061
⚠	22	DEFLECTION YOKE(L1)	ATL1090
⚠	23	DEFLECTION YOKE(L2)	ATL1090
⚠	24	DEFLECTION YOKE(L3)	ATL1090
⚠	25	1P AC INLET	AKP1021
NSP	26	PAL SOCKET	AKX-202
⚠	27	FUSE(T250mA/250V, FU502)	AEK-503
⚠	28	FUSE(T250mA/250V, FU3700)	AEK-503
⚠	29	FUSE(T400mA/250V, FU501)	AEK-504
⚠	30	FUSE(T2.5A/250V, FU653)	AEK-512
⚠	31	FUSE(T4A/250V, FU654)	AEK-514
⚠	32	FUSE(T4A/250V, FU655)	AEK-514
⚠	33	FUSE(T4A/250V, FU656)	AEK-514
⚠	34	FUSE(T4A/250V, FU657)	AEK-514
⚠	35	FUSE(T6.3A/250V, FU651)	AEK-516
⚠	36	FUSE(T6.3A/250V, FU652)	AEK-516
	37	SPEAKER 66	D66AP45-56L
	38	SPEAKER 12	SWM1018
⚠	39	AC POWER CORD	ADG1107
⚠	40	AC POWER CORD	ADG1109
NSP	41	REAR PANEL ASSY	AMC1006
NSP	42	DEFLECTION CHASSIS	ANA1182
NSP	43	TERMINAL BOARD CHASSIS	ANA1183
NSP	44	CRT STAND	ANA1184
NSP	45	HIGH VOLTAGE CHASSIS ASSY	ANA1226
NSP	46	REAR X-RAY SHIELD	ANF1094
NSP	47	FLAME UNDER HOLDER	ANG1688
NSP	48	SCREEN METAL FRAME V	ANG1689
NSP	49	SCREEN METAL FRAME H	ANG1690
NSP	50	MIRROR HOLDER A	ANG1700
NSP	51	CONVER FRAME H	ANG1703
NSP	52	CONVER FRAME R	ANG1704
NSP	53	CONVER FRAME L	ANG1705
NSP	54	ELECTROSTATIC FOCUS HOLDER B	ANG1865
NSP	55	FOCUS PACK HOLDER B	ANG1866
NSP	56	CR HOLDER	ANG1867
	57	SHIELD COVER	ANH1166
	58	• • • • •	
	59	• • • • •	
NSP	60	PCB SUPPORT	AEC1024
	61	• • • • •	
NSP	62	NYLON CLAMP	AEC1321
NSP	63	CUSHION	AEC1417
	64	GROMMET	AEC1418
NSP	65	SCREEN CUSHION	AEC1420
NSP	66	MIRROR HOLDER STAY SHEET	AED1141
NSP	67	SHEET A1	AED1151
NSP	68	SHEET A2	AED1152
	69	BINDER	AEP-215
☆	70	LENS ASSY	AMR2432
	71	LINER SHEET(40)	AMR2441
	72	MIRROR	AMR2443
	73	FRESNEL LENS(40)	AMR2487
	74	SMOKE LENTICULAR SHEET(40)	AMR2511
NSP	75	NAME PLATE	AAX1754
NSP	76	COLOR SYSTEM LABEL	AAX1755
NSP	77	HANDLE CAUTION SHEET	AAX1779
NSP	78	HANDLE SHEET	AAX1780
	79	• • • • •	
	80	SCREW 3×10	ABA1021
	81	SCREW	ABA1099
	82	M5 SCREW	ABA1161
	83	SCREW M3	ABA1166
	84	SCREW 3×12	ABA1167
	85	• • • • •	
	86	• • • • •	
	87	HEXAGONAL DUCT NUT	ABN-087
	88	SCREW	AMZ40P080FZK
	89	SCREW	AYC35P160FZK
	90	SCREW	BBZ30P080FZK
	91	SCREW	BBZ30P100FZK
	92	SCREW	BYC35P120FZB
	93	SCREW	BYC40P100FMC
	94	SCREW	BYC40P120FMC
	95	SCREW	BYC40P120FZK
	96	SCREW	BYC40P140FMC
	97	SCREW	BYC40P140FZK
	98	SCREW	FBT40P120FZK
	99	SCREW	OYC40P160FZK
	100	SCREW	PMB50P150FZB
	101	SCREW	VBT30P080FZK
	102	SCREW	VBZ30P100FMC
	103	SCREW	VBZ30P200FMC
	104	SCREW	VPZ30P100FMC
	105	• • • • •	
	106	REAR COVER	ANF1093
	107	BADGE(GOLD)	AAM1052
	108	SCREEN FRAME LH	AAP1346
	109	SCREEN FRAME UH	AAP1347
	110	SCREEN FRAME V ASSY	AAP1429
	111	GRILLE	AMR2481
	112	MIRROR CASE ASSY	AME1088
	113	COVER	AMR2627
NSP	114	CAUTION CARD	AAX1756
	115	OPERATING INSTRUCTIONS (ENGLISH)	ARB1458
	116	REMOTE CONTROL UNIT	AXD1369
NSP	117	BATTERY(R6P, AA)	AEX-010
	118	UPPER PAD ASSY	AHA1644
	119	UNDER PAD L	AHA1647
	120	UNDER PAD R	AHA1648
	121	SPIRAL TUBE	AHB1128
	122	UNDER CARTON	AHD2641
	123	UPPER CARTON	AHD2642
NSP	124	PACKING SHEET	AHG1078
NSP	125	BAG	AHG1083
NSP	126	VINYL SHEET L	AHG1110
NSP	127	VINYL SHEET S	AHG1111
	128	SHOULDER SPACER	AHG1205
☆⚠	129	CRT ASSY(40G)	AWY1242
☆⚠	130	CRT ASSY(40R)	AWY1243
☆⚠	131	CRT ASSY(40B)	AWY1244
	132	BATTERY COVER	AZN1970
	133	1P LEAD WIRE(J4)	ADX1732
	134	4P HOUSING WIRE(J5)	ADX1671
	135	4P HOUSING WIRE(J6)	ADX1672
	136	1P LEAD WIRE(J7)	ADX1472
	137	4P HOUSING WIRE(J8)	ADX2033
	138	1P LEAD WIRE(J9)	ADX1675
	139	1P LEAD WIRE(J10)	ADX1676
	140	1P LEAD WIRE(J11)	ADX1674
	141	1P LEAD WIRE(J15)	ADX1677
NSP	142	CABINET	AMM2281

4.2 PACKING

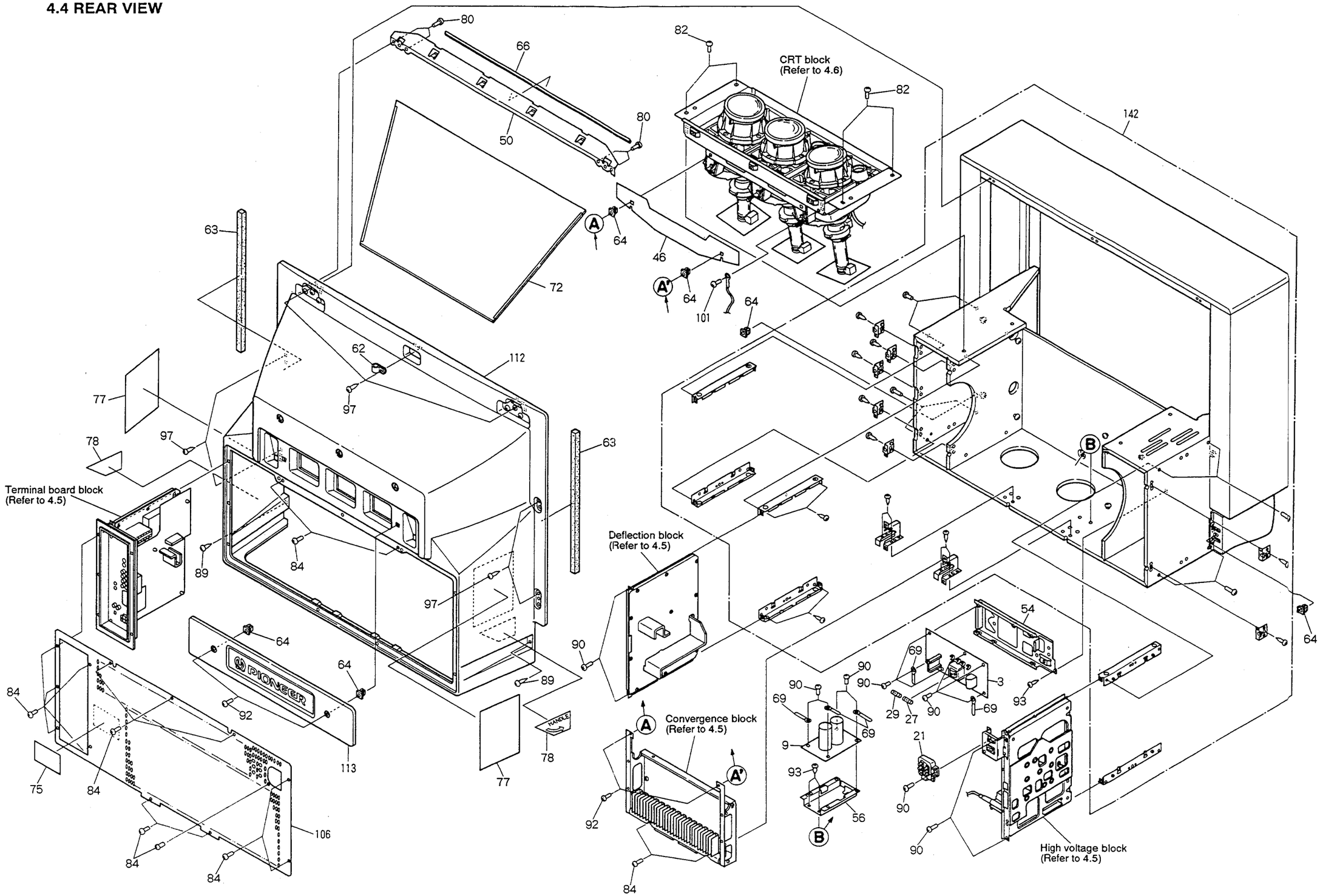


4.3 FRONT VIEW





4.4 REAR VIEW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CRT block
(Refer to 4.6)
142
63
72
A
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46
A'
101
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112
77
97
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Terminal board block
(Refer to 4.5)
89
84
63
Deflection block
(Refer to 4.5)
90
64
PIONEER
92
113
75
106
78
77
Convergence block
(Refer to 4.5)
B
54
69
3
29
27
93
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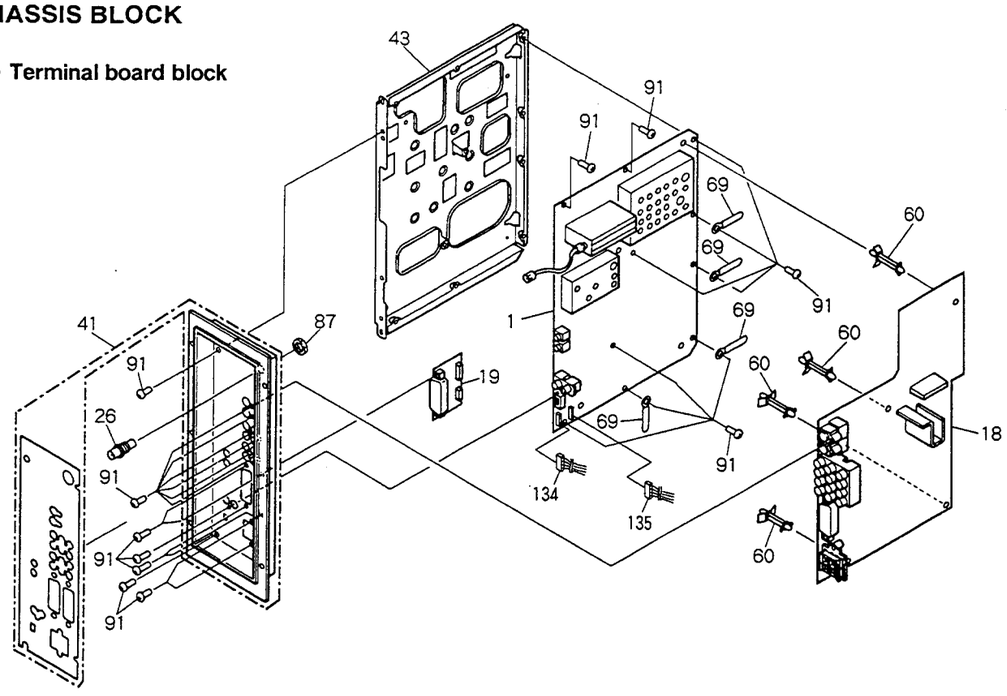
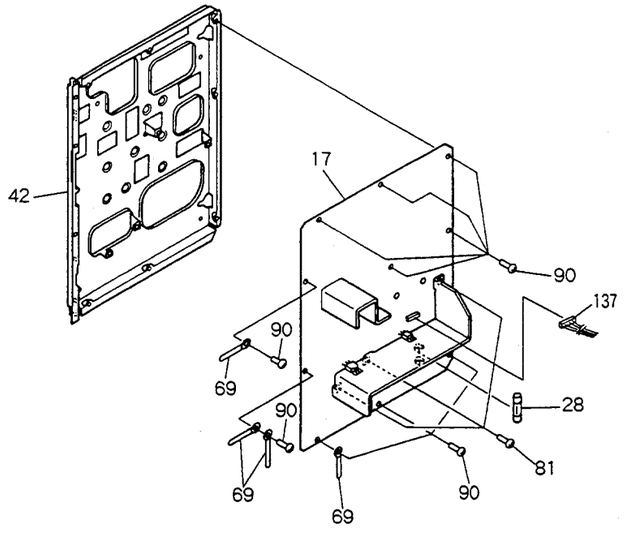
56
21
High voltage block
(Refer to 4.5)

4.5 CHASSIS BLOCK

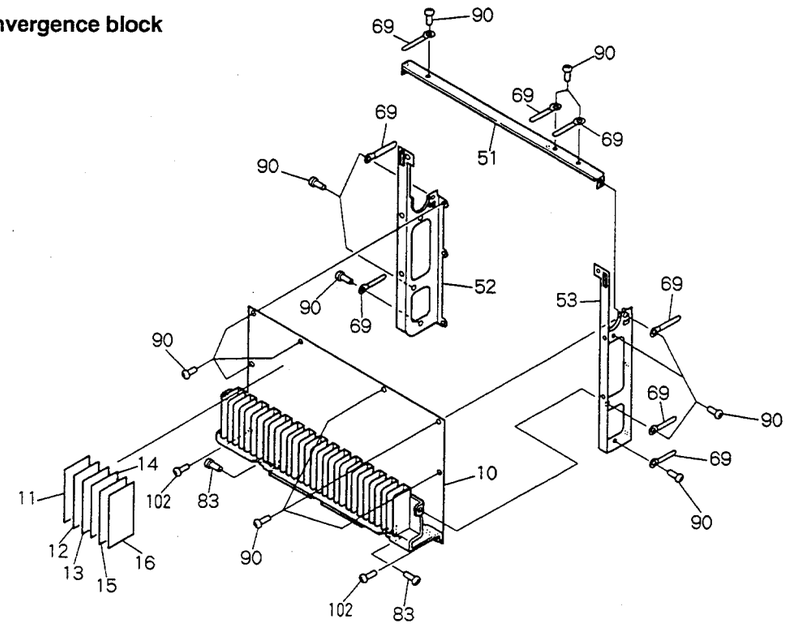
• **Terminal board block**



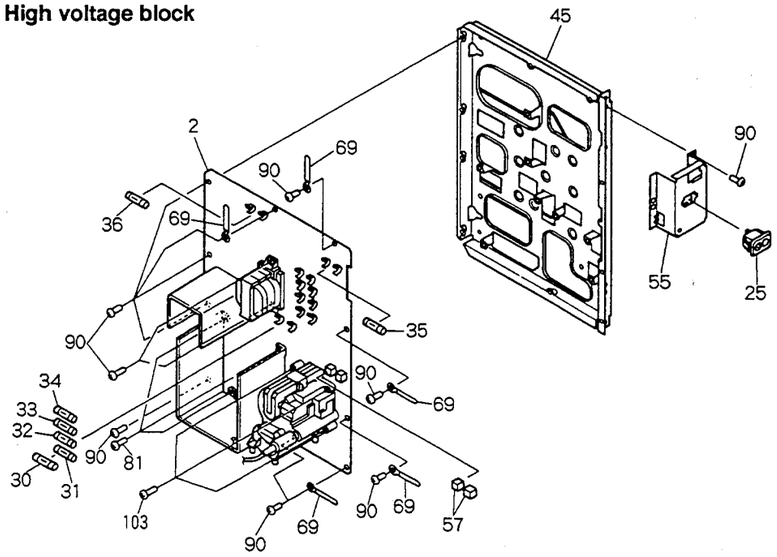
• **Deflection block**



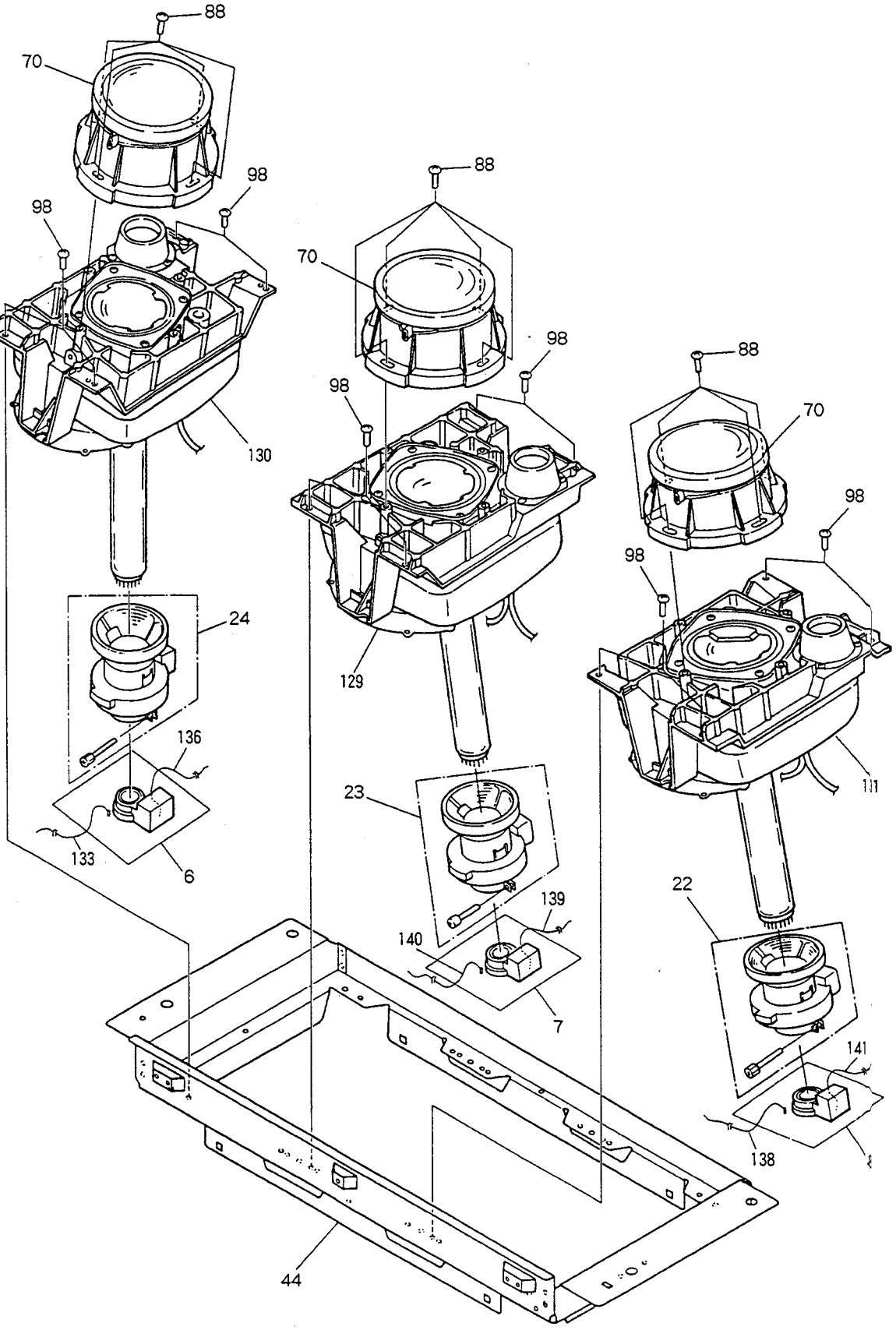
• **Convergence block**



• **High voltage block**



4.6 CRT BLOCK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5. SCHEMATIC AND PCB CONNECTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAMS (Type 5A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**

2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**

3. **RESISTORS:**
Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance:(F):±1%, (G):±2%, (K):±10%, (M):±20% or ±5% unless otherwise noted.

4. **CAPACITORS:**
Unit : p:pF or μF unless otherwise noted.
Ratings : capacitor (μF) / voltage (V) unless otherwise noted.
Rated voltage : 50V except for electrolytic capacitors.

5. **COILS:**
Unit : m:mH or μH unless otherwise noted.

6. **VOLTAGE AND CURRENT:**
▭ or ←V:
DC voltage (V) at no input signal unless otherwise noted.
Value in ( ) is DC voltage at color bar signal input state.
⇦mA or ←mA:
DC current at no input signal unless otherwise noted.

7. **OTHERS:**
- ⊘ or ⊘ : Adjusting point.
- ◀ : Measurement point.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by ☆ are important parts which relate to X-rays radiation. If any of these parts needs to be replaced, always replace with specified parts.
- Parts marked by × are important parts which relate to X-rays radiation. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself. If any part marked by × is replaced, there is danger of being exposed to X-rays.

8. **SCH – □ ON THE SCHEMATIC DIAGRAM:**
- SCH–□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

9. **SWITCHES** (Underline indicates switch position):
TUNER-UCOM ASSY
S101: SPEAKER SELECTOR INT-EXT

FRONT CONTROL ASSY
S851: STANDBY/ON
S852: SET
S853: ON/OFF
S856: +
S857: -] SELECT ADJ — PRESET MENU
S858: FACTORY ADJ MODE
S859: FINE TUNE (ON)
S860: TV SYSTEM
S861: △
S862: ▽] ◿
S863: △
S864: ▽] CH/PR
S865: CH/PR
S866: ⊖

NOTE FOR PCB CONNECTION DIAGRAMS

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B.pattern diagram indication	Corresponding part symbol	Part Name
Q504 (E)	E or E	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

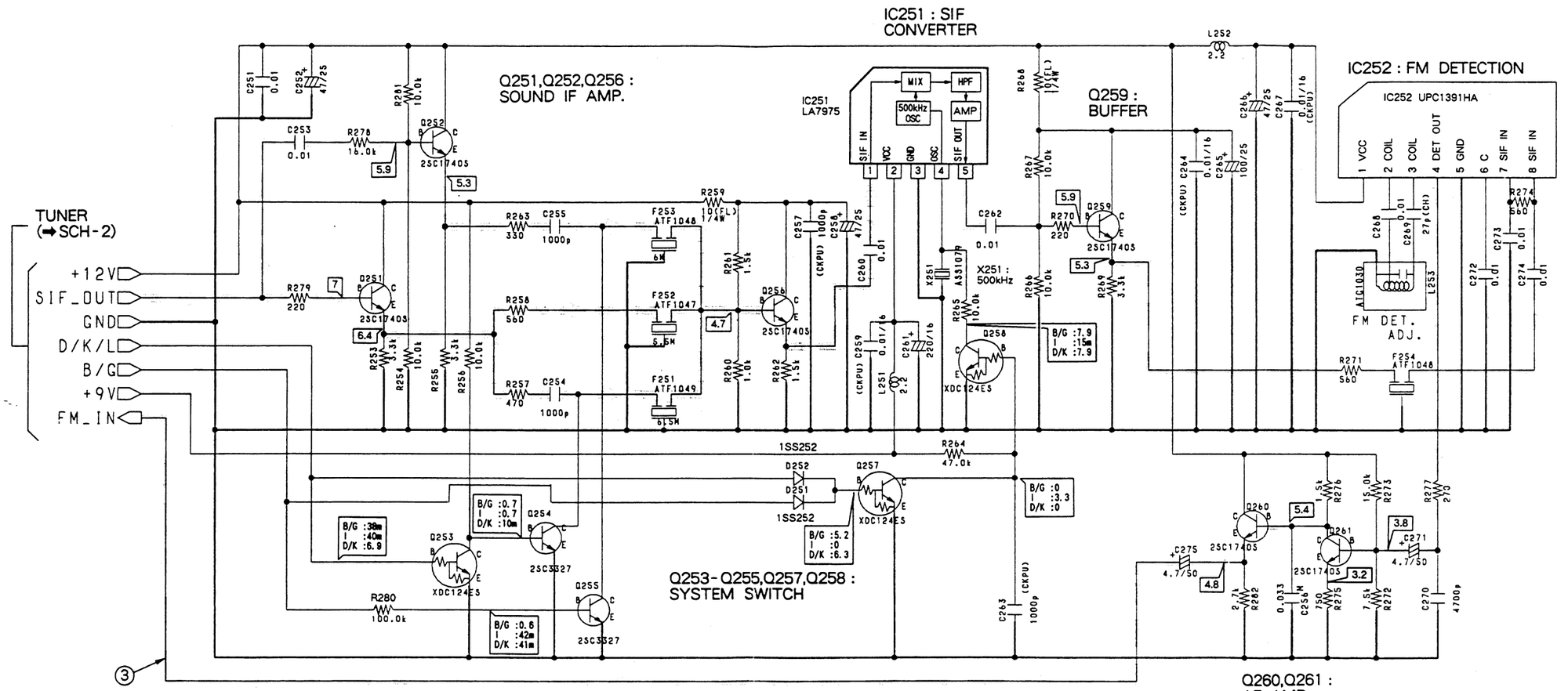
P.C.B pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with © (double circles) shows negative terminal.
4. The diode terminal marked with © (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

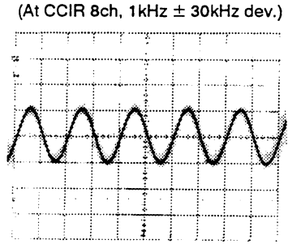
5.3 TUNER-UCOM ASSY (2/5)

TUNER-UCOM ASSY (2/5) (AWV1385)
• FM BLOCK

SCH-3



③ **C275 lead wire of + side**
V range : 500mV/div.
H range : 0.5msec/div.
(At CCIR 8ch, 1kHz ± 30kHz dev.)



: Audio signal route

IC251 (LA7975)

Pin No.	Voltage (V)
1	2.9
2	8.9
3	0
4	7.9
5	7.6

IC252 (UPC1391HA)

Pin No.	Voltage (V)
1	11.8
2	5.9
3	2.4
4	3.5
5	0
6	3.7
7	3.7
8	3.7

5.4 TUNER-UCOM (3/5) AND I/O-TEXT-Y/C (5/5) ASSEMBLIES

SCH-4

I/O-TEXT-Y/C ASSY (5/5) (AWZ5272)
• EXT SP BLOCK

TUNER-UCOM ASSY (3/5) (AWV1385)
• PRE AUDIO BLOCK

Voltage :
No input signal.
BASS, TREBL : CENTER
VOL :MIN

IC751 (TA7630P)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	9	3.1
2	5.5	10	3.1
3	5.5	11	1.2
4	5.5	12	12
5	–	13	5.5
6	1.2	14	5.5
7	–	15	5.5
8	–	16	–

UCOM (➡SCH-6): A.MUTE, 5V.STB, BALANCE, VOLUME, TREBLE, BASS

TUNER (➡SCH-2) +12V

NICAM (➡SCH-5)

I/O-TEXT-Y/C ASSY (1/5) D9 (➡SCH-7): AU.L, GND, AU.R

IC751 : AUDIO PRE AMP.

Q757,Q758,Q761,Q762 : AMP.

Q753 : BUFFER

Q755,Q756,Q759,Q760 : MUTE

Q754 : BUFFER

Q751,Q752 : BUFFER

EXTERNAL SPEAKERS

SPEAKER 66

SPEAKER 12

INT/EXT SPEAKER SELECTOR

CONVERGENCE-AUDIO AMP ASSY (3/3) (➡SCH-16)

VARIABLE AUDIO

: Audio signal route

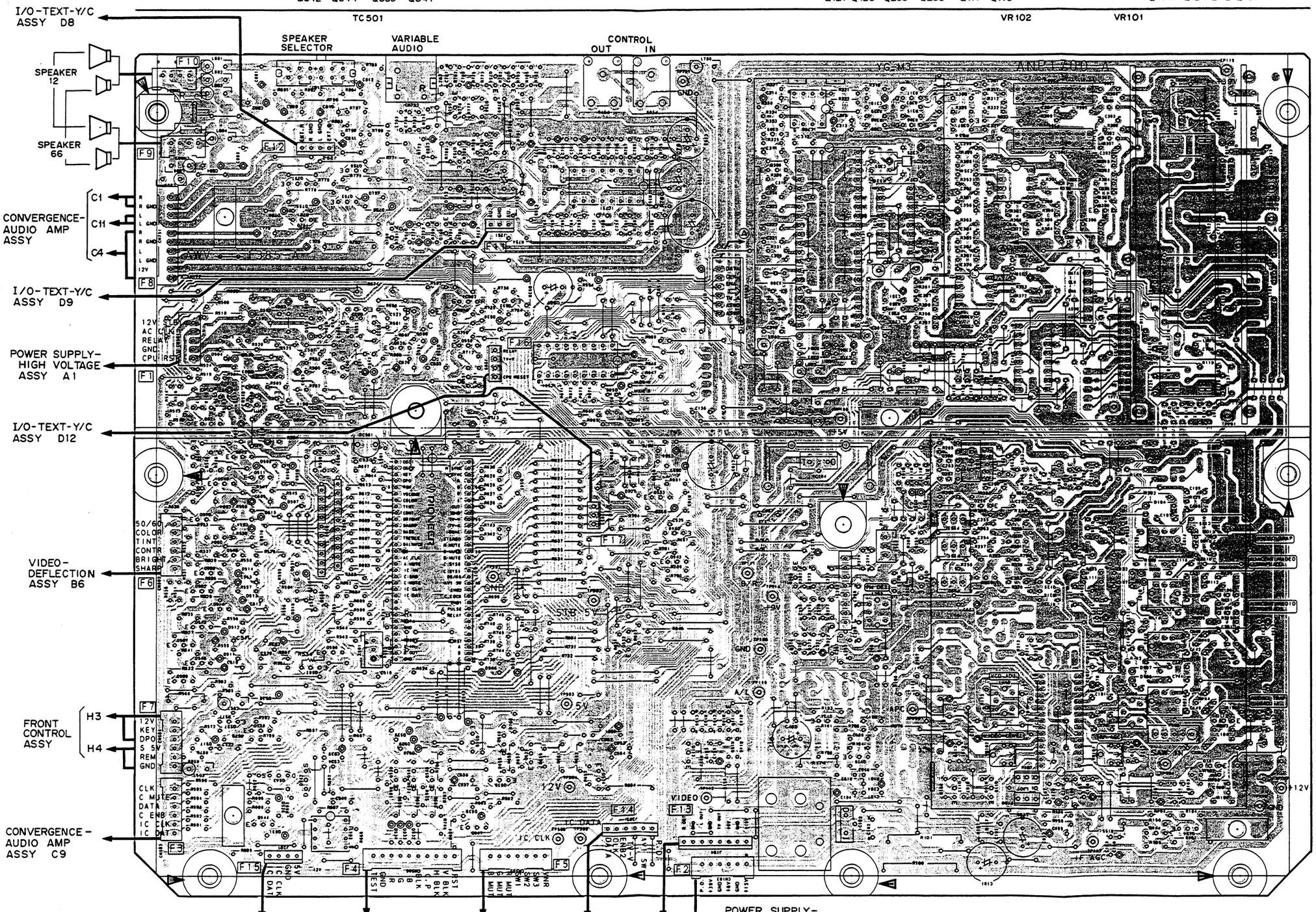
TUNER-UCOM ASSY (3/5), I/O-TEXT-Y/C ASSY (5/5) SCH-4

TUNER-UCOM ASSY

PCB-1

IC503 IC501 IC502 IC504 IC751 IC300 IC301 IC302 IC303 IC304 IC101
Q757 Q751 Q752 Q758 Q759 Q753–Q756 Q762 IC104 IC252 Q303 IC305 Q307 IC231 IC102 Q259 Q300–Q302
Q501–Q504 Q527 Q528 Q507 Q506 Q529 Q760 Q547–Q552 Q546 Q545 Q305 IC103 Q304 Q251 Q252 Q125 Q108 Q110 Q104 Q105 Q101 Q102
Q508 – Q521 Q531 Q522 – Q526 Q530 Q761 Q536 Q535 Q534 Q532 Q533 Q113 Q111 Q306 Q260 Q261 Q103 Q256 – Q258 Q106 Q107
Q542–Q544 Q539–Q541 Q121 Q120 Q253–Q255 Q117 Q115 Q114 Q124 Q112 Q109

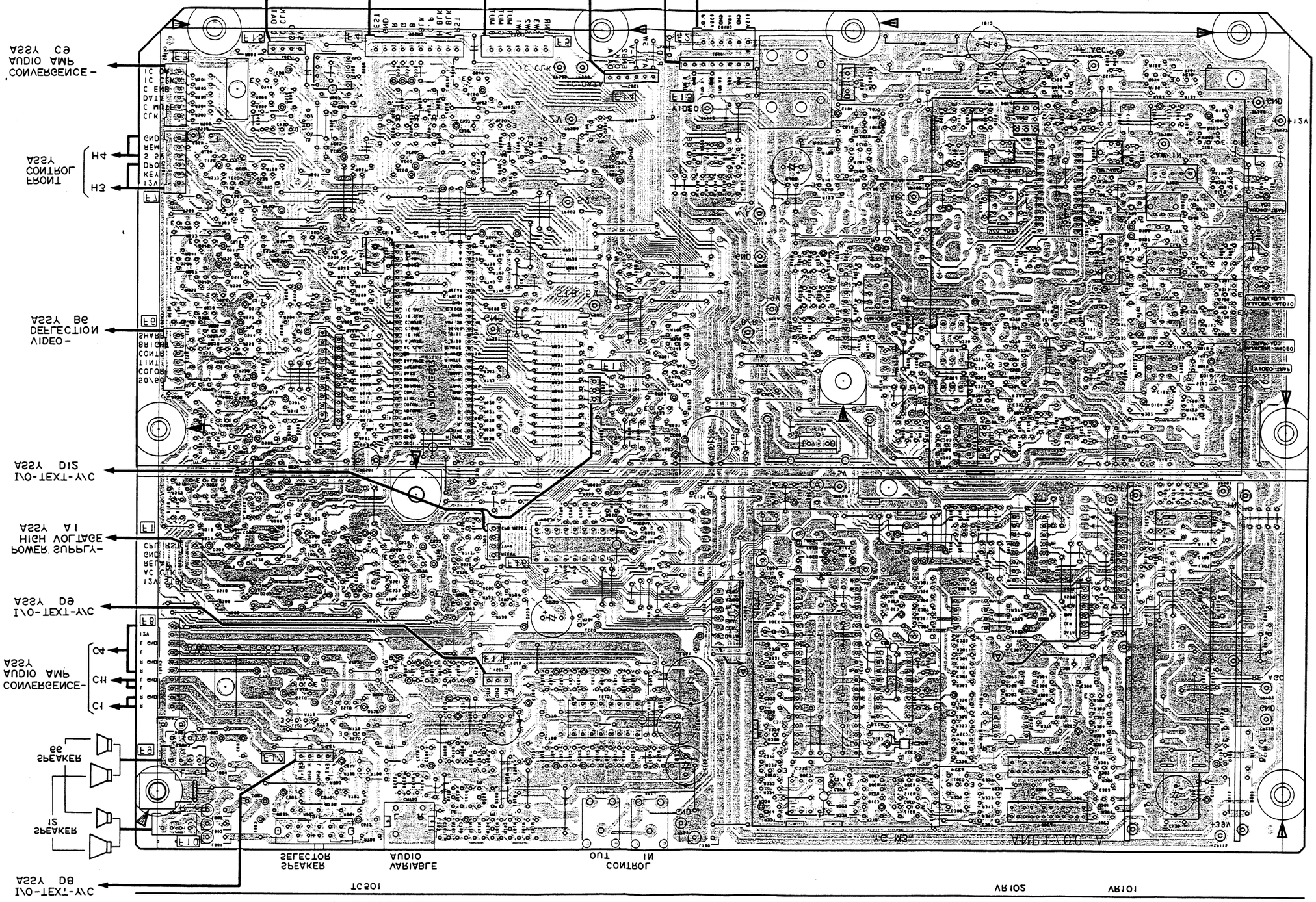
TC501 VR102 VR101



• This diagram is viewed from the mounted parts side.

● This diagram is viewed from the foil side.

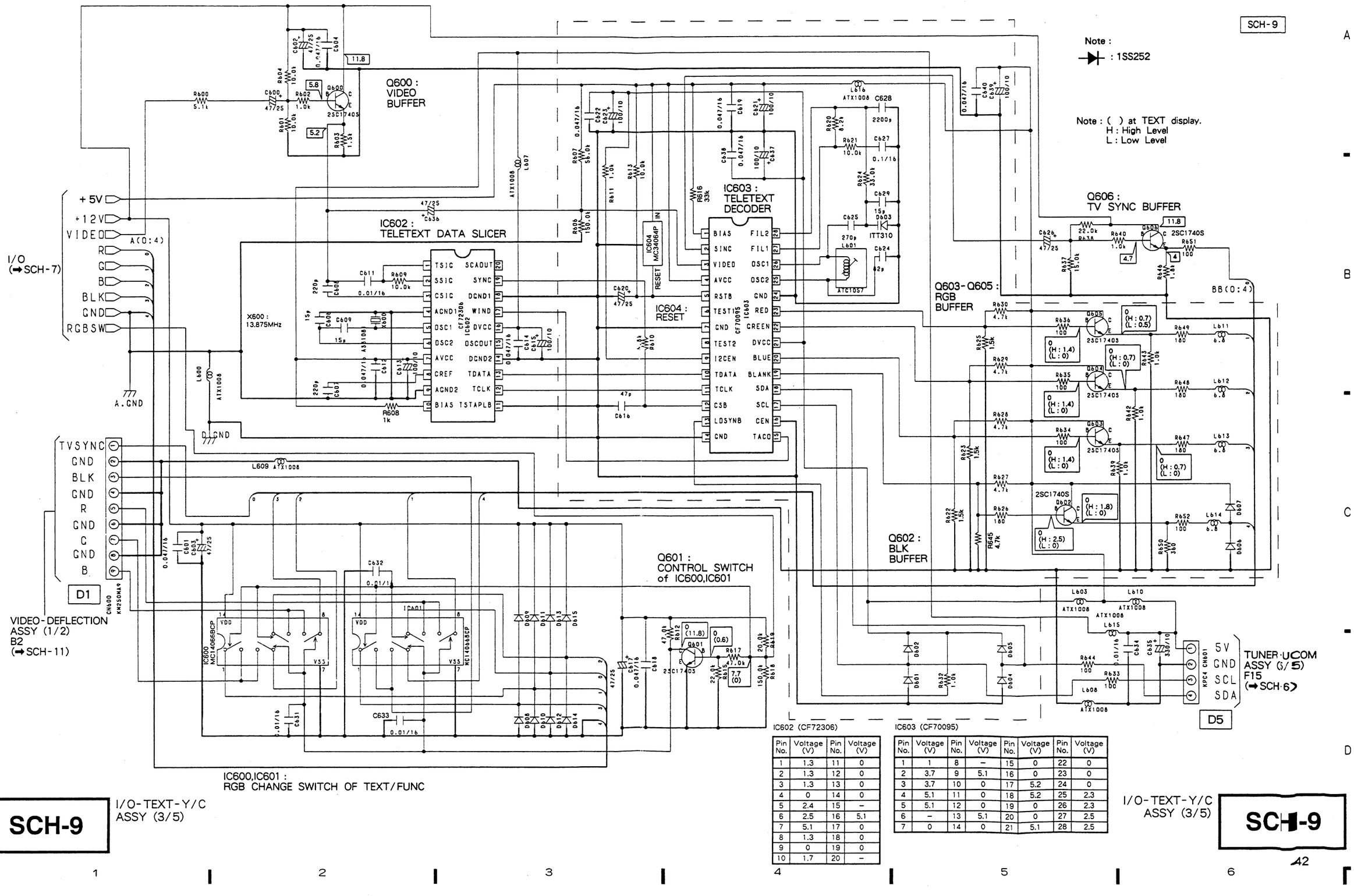
TUNER-UCOM ASSY



TUNER-UCOM ASSY

5.9 I/O-TEXT-Y/C ASSY (3/5)

I/O-TEXT-Y/C ASSY (3/5) (AWZ5272)
• TEXT BLOCK



IC602 (CF72306)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	1.3	11	0
2	1.3	12	0
3	1.3	13	0
4	0	14	0
5	2.4	15	–
6	2.5	16	5.1
7	5.1	17	0
8	1.3	18	0
9	0	19	0
10	1.7	20	–

IC603 (CF70095)

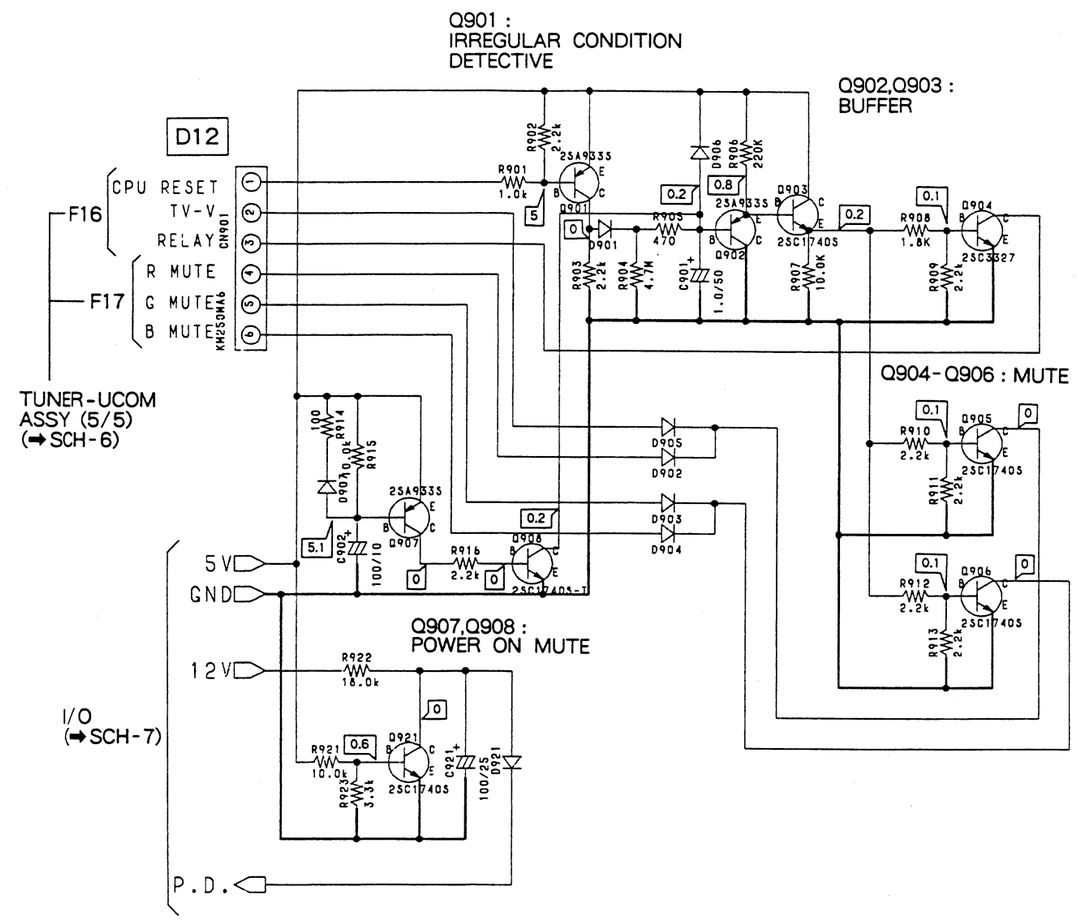
Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	1	8	–	15	0	22	0
2	3.7	9	5.1	16	0	23	0
3	3.7	10	0	17	5.2	24	0
4	5.1	11	0	18	5.2	25	2.3
5	5.1	12	0	19	0	26	2.3
6	–	13	5.1	20	0	27	2.5
7	0	14	0	21	5.1	28	2.5

5.10 I/O-TEXT-Y/C ASSY (4/5)

I/O-TEXT-Y/C ASSY (4/5) (AWZ5272)
• POWER SUPPLY HOLD BLOCK

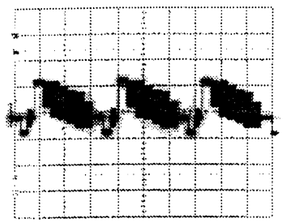
SCH-10

Note :
: 1SS252

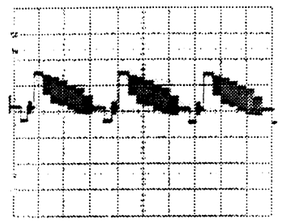


• Waveformes at I/O-TEXT-Y/C ASSY

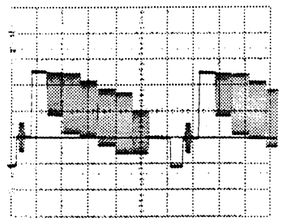
1 IC101 pin 34
V range : 1V/div.
H range : 10 μsec/div.



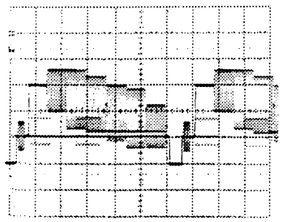
2 Q105 Emitter
V range : 1V/div.
H range :10 μsec/div.



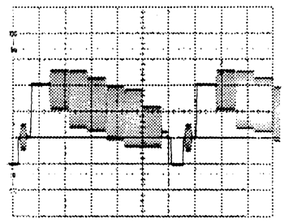
3-1 Q752 Emitter (PAL)
V range : 0.5V/div.
H range : 10 μsec/div.



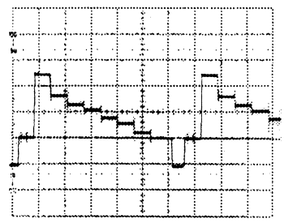
3-2 Q752 Emitter (NTSC)
V range : 0.5V/div.
H range : 10 μsec/div.



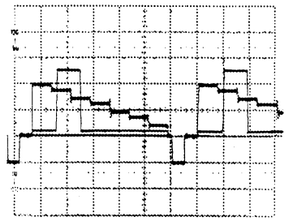
3-3 Q752 Emitter (4.43 NTSC)
V range : 0.5V/div.
H range : 10 μsec/div.



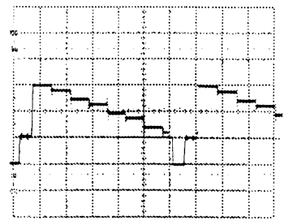
4-1 TP751 (Y OUT) (PAL)
V range : 0.5V/div.
H range : 10 μsec/div.



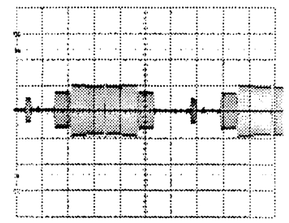
4-2 TP751 (Y OUT) (NTSC)
V range : 0.5V/div.
H range : 10 μsec/div.



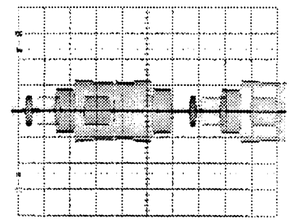
4-3 TP751 (Y OUT) (4.43 NTSC)
V range : 0.5V/div.
H range : 10 μsec/div.



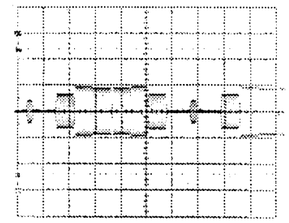
5-1 TP753 (C OUT) (PAL)
V range : 0.2V/div.
H range : 10 μsec/div.



5-2 TP753 (C OUT) (NTSC)
V range : 0.2V/div.
H range : 10 μsec/div.



5-3 TP753 (C OUT) (4.43 NTSC)
V range : 0.5V/div.
H range : 10 μsec/div.



PCB-2

I/O-TEXT-Y/C ASSY

AV-2 ASSY

EXTERNAL SPEAKERS

TV OUT

EURO AV1

AV4

AV3

S - VIDEO

AV4 4 AV3 3

L (MONO)

VIDEO

EURO AV2

TUNER-UCOM ASSY F12

F11

H2

H1

FRONT CONTROL ASSY

TUNER-UCOM ASSY F13

TUNER-UCOM ASSY F16,F17

VIDEO-DEFLECTION ASSY B2

TUNER-UCOM ASSY F15

TUNER-UCOM ASSY F14

VIDEO-DEFLECTION ASSY B3

CMK-P3X

AWZ 5272

ANP1705-C

VR751

Q301

Q252
Q253

IC251
IC252

Q104

Q115
Q114 IC101
Q124
Q101
Q103
Q125 Q251
Q105
Q102
Q106 Q111
Q110
Q109 Q126
Q112

Q759
Q600 Q758
Q755

IC751 Q773
IC602 Q752
Q901 Q754
Q903 IC600
Q908 IC604
Q753
Q760
Q904
Q906 Q757
Q756
Q907 Q767
Q606 Q751
Q905
Q766
Q761
IC401 Q763
IC603
IC601 Q765
Q602

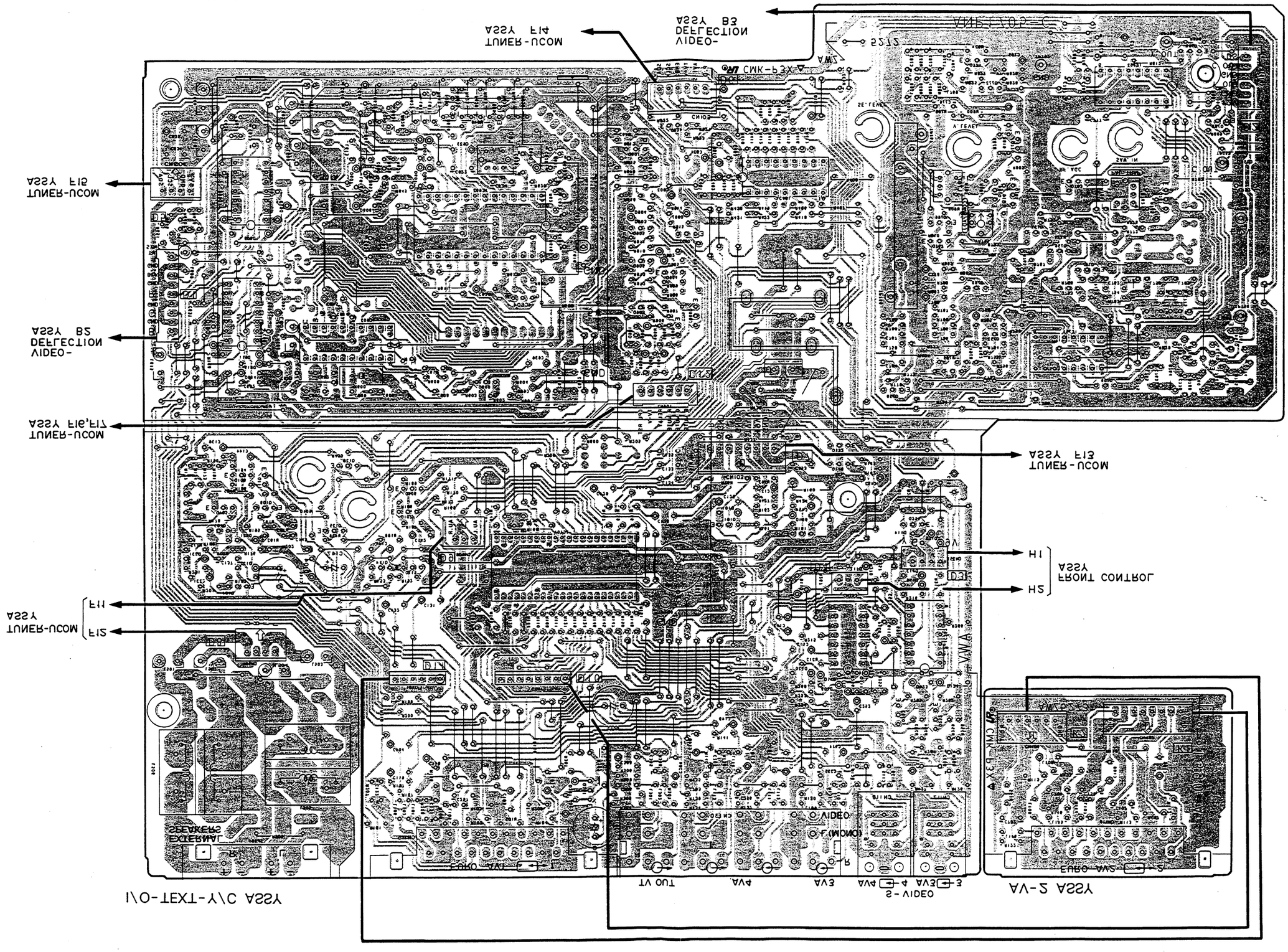
Q601 Q770

Q921 Q768
Q603

Q605
Q772
IC752 Q771
Q769

• This diagram is viewed from the mounted parts side.

● This diagram is viewed from the foil side.

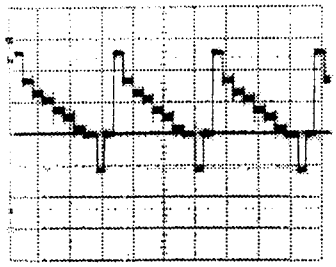


S-BOARD

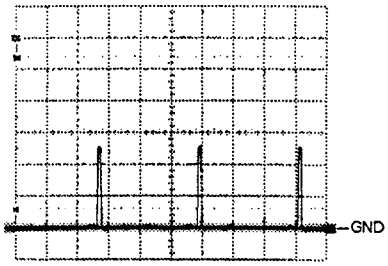
SD-M1401

• Waveformes at VIDEO - DEFLECTION ASSY

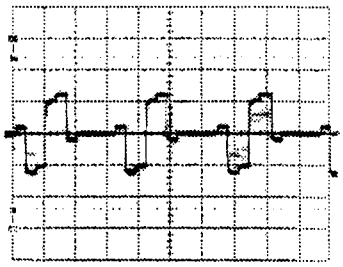
(1) - 1 TP201 (Y)
(PAL)
V range : 0.5V/div.
H range : 20 μsec/div.
(AC range)



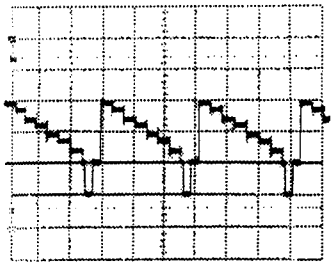
(3) - 1 TP214 (C. PULSE)
(PAL)
V range : 2V/div.
H range : 20 μsec/div.



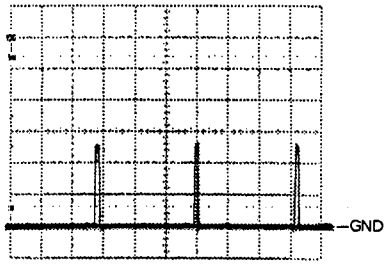
(5) - 1 IC202 pin 8 (R-Y)
(PAL)
V range : 0.5V/div.
H range : 20 μsec/div.
(AC range)



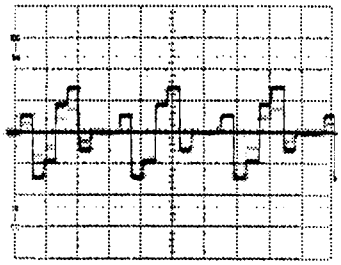
(1) - 2 TP201 (Y)
(NTSC)
V range : 0.5V/div.
H range : 20 μsec/div.
(AC range)



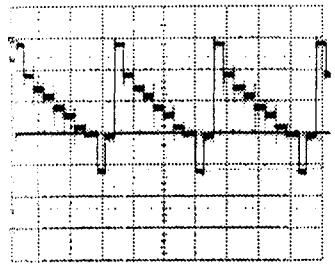
(3) - 2 TP214 (C. PULSE)
(NTSC)
V range : 2V/div.
H range : 20 μsec/div.



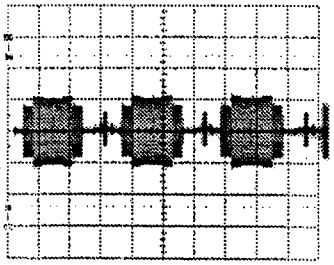
(5) - 2 IC202 pin 8 (R-Y)
(NTSC)
V range : 0.5V/div.
H range : 20 μsec/div.
(AC range)



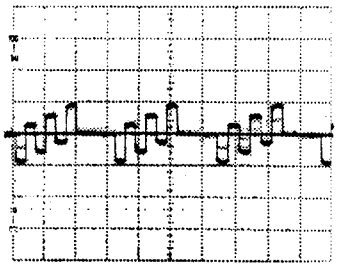
(2) - 1 TP207 (Y)
(PAL)
V range : 0.2V/div.
H range : 20 μsec/div.
(AC range)



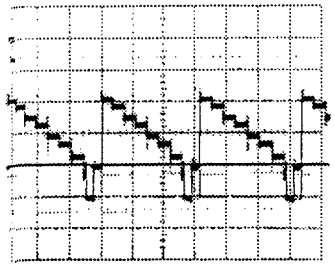
(4) - 1 TP203 (C)
(PAL)
V range : 0.2V/div.
H range : 20 μsec/div.
(AC range)



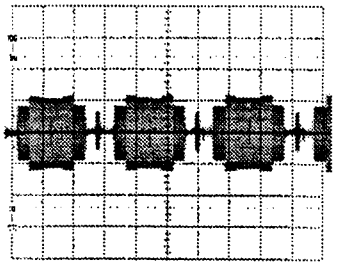
(6) - 1 IC202 pin 7 (B-Y)
(PAL)
V range : 0.5V/div.
H range : 20 μsec/div.
(AC range)



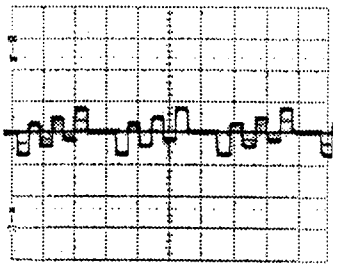
(2) - 2 TP207 (Y)
(NTSC)
V range : 0.2V/div.
H range : 20 μsec/div.
(AC range)



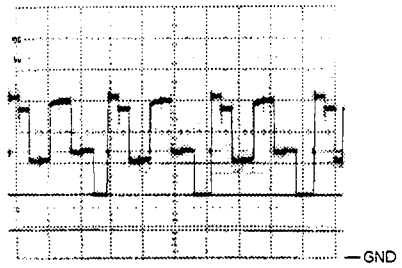
(4) - 2 TP203 (C)
(NTSC)
V range : 0.2V/div.
H range : 20 μsec/div.
(AC range)



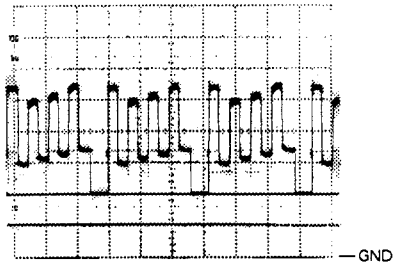
(6) - 2 IC202 pin 7 (B-Y)
(NTSC)
V range : 0.5V/div.
H range : 20 μsec/div.
(AC range)



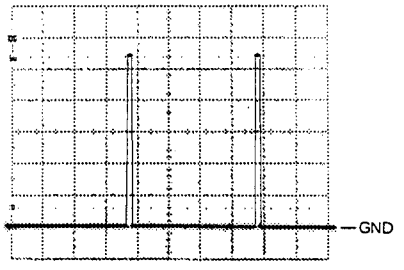
(7) - 1 **TP222 (RED)**
(PAL)
V range : 1V/div.
H range : 20 μsec/div.



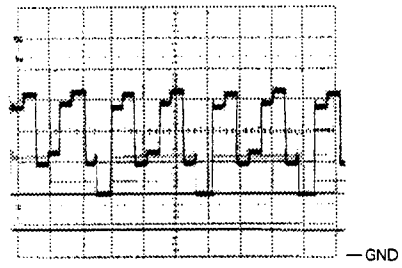
(9) - 1 **TP221 (BLUE)**
(PAL)
V range : 1V/div.
H range : 20 μsec/div.



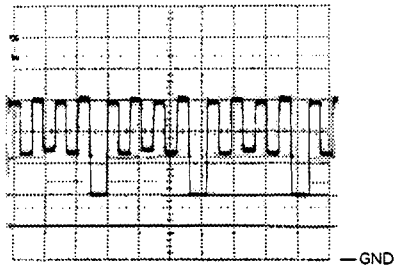
(11) - 1 **IC204 pin 31 (V. BLK)**
(PAL)
V range : 2V/div.
H range : 5msec/div.



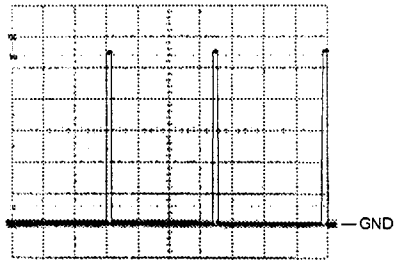
(7) - 2 **TP222 (RED)**
(NTSC)
V range : 1V/div.
H range : 20 μsec/div.



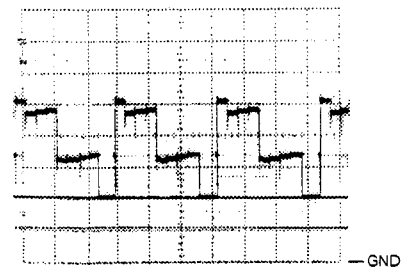
(9) - 2 **TP221 (BLUE)**
(NTSC)
V range : 1V/div.
H range : 20 μsec/div.



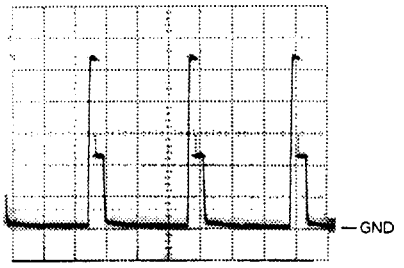
(11) - 2 **IC204 pin 31 (V. BLK)**
(NTSC)
V range : 2V/div.
H range : 5msec/div.



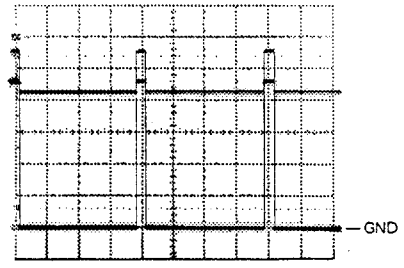
(8) - 1 **TP220 (GREEN)**
(PAL)
V range : 1V/div.
H range : 20 μsec/div.



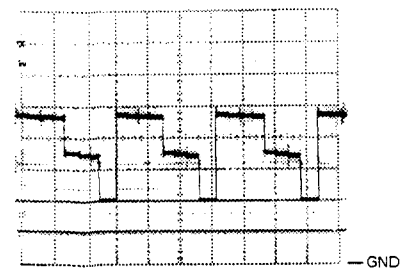
(10) - 1 **TP213 (S. C.)**
(PAL)
V range : 2V/div.
H range : 20 μsec/div.



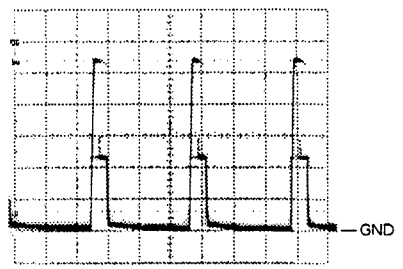
(12) - 1 **TP-202 (C. BLK)**
(PAL)
V range : 2V/div.
H range : 5msec/div.



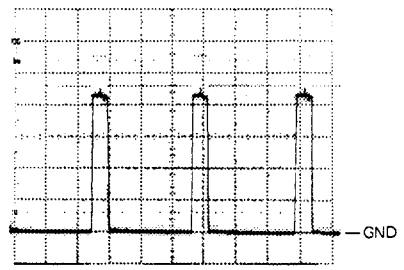
(8) - 2 **TP220 (GREEN)**
(NTSC)
V range : 1V/div.
H range : 20 μsec/div.



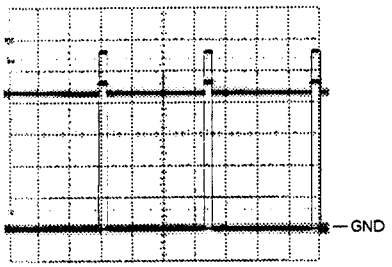
(10) - 2 **TP213 (S. C.)**
(NTSC)
V range : 2V/div.
H range : 20 μsec/div.



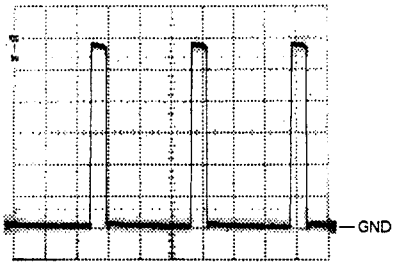
(12) - 2 **TP-202 (C. BLK)**
(PAL)
V range : 2V/div.
H range : 20 μsec/div.



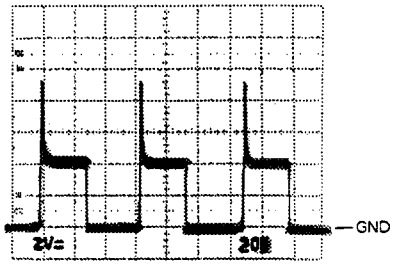
(12) - 3 **TP202 (C. BLK)**
(NTSC)
V range : 2V/div.
H range : 5msec/div.



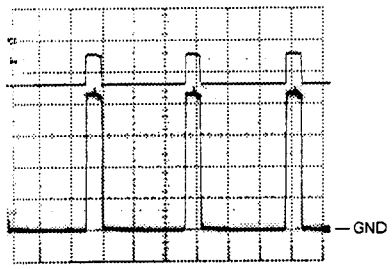
(14) - 1 **TP3706 (H. BLK)**
(PAL)
V range : 2V/div.
H range : 20 μsec/div.



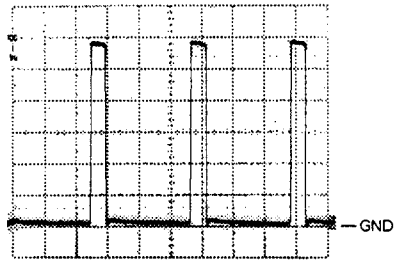
(17) **Q3703 Collector**
(PAL)
V range : 20V/div.
H range : 20 μsec/div.



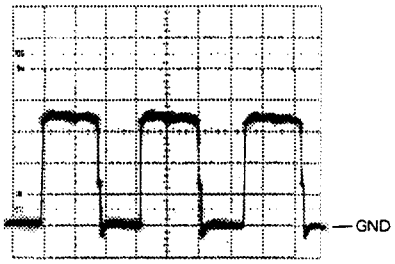
(12) - 4 **TP202 (C. BLK)**
(NTSC)
V range : 2V/div.
H range : 20 μsec/div.



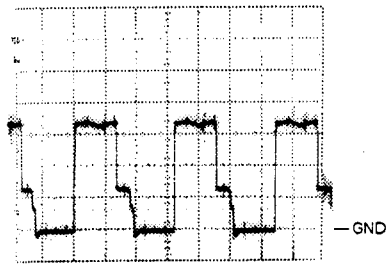
(14) - 2 **TP3706 (H. BLK)**
(NTSC)
V range : 2V/div.
H range : 20 μsec/div.



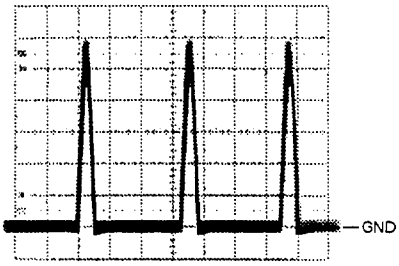
(18) **Q3703 Base**
(PAL)
V range : 0.2V/div.
H range : 20 μsec/div.



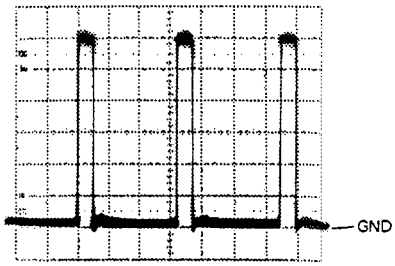
(13) - 1 **TP3703 (H. DRIVE)**
(PAL)
V range : 0.5V/div.
H range : 20 μsec/div.



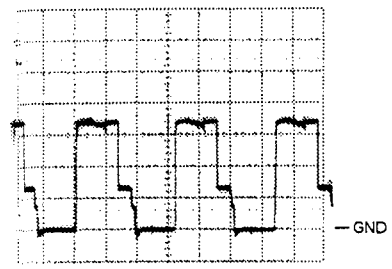
(15) **Q3705 Collector**
(PAL)
V range : 200V/div.
H range : 20 μsec/div.



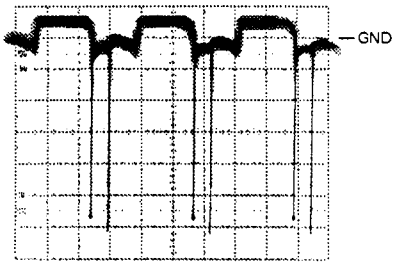
(19) **Q3711 Emitter**
(PAL)
V range : 2V/div.
H range : 20 μsec/div.



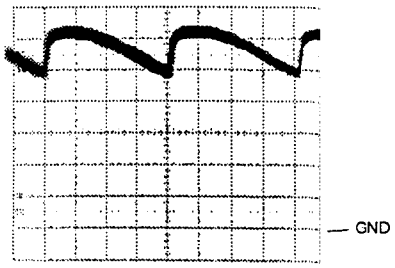
(13) - 2 **TP3703 (H. DRIVE)**
(NTSC)
V range : 0.5V/div.
H range : 20 μsec/div.



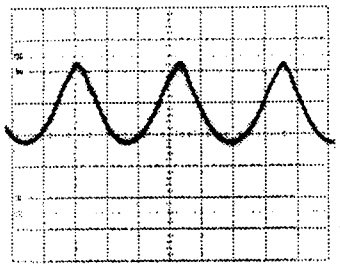
(16) **Q3705 Base**
(PAL)
V range : 2V/div.
H range : 20 μsec/div.



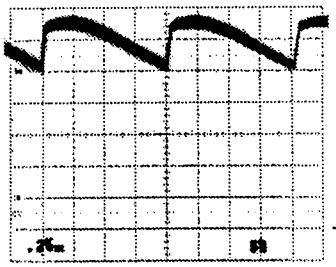
(20) **C3716 lead wire of + side**
(PAL)
V range : 20V/div.
H range : 5msec/div.



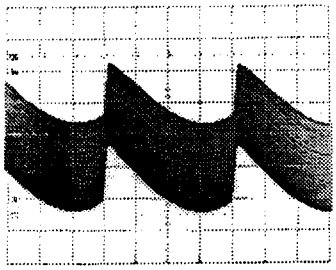
(21) - 1 **Q3708 Collector (PAL)**
V range : 200V/div.
H range : 20 μsec/div.
(H period)



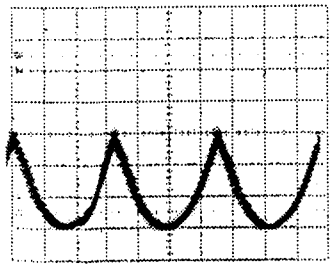
(23) **Both sides of C3721 (PAL)**
V range : 200V/div.
H range : 5msec/div.



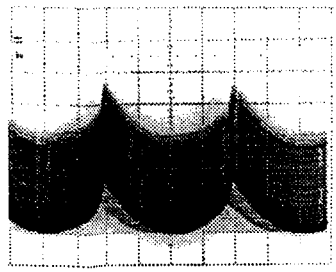
(21) - 2 **Q3708 Collector (PAL)**
V range : 200V/div.
H range : 5msec/div.
(V period)



(22) - 1 **Both sides of R3734 (PAL)**
V range : 0.5V/div.
H range : 20 μsec/div.
(H period)

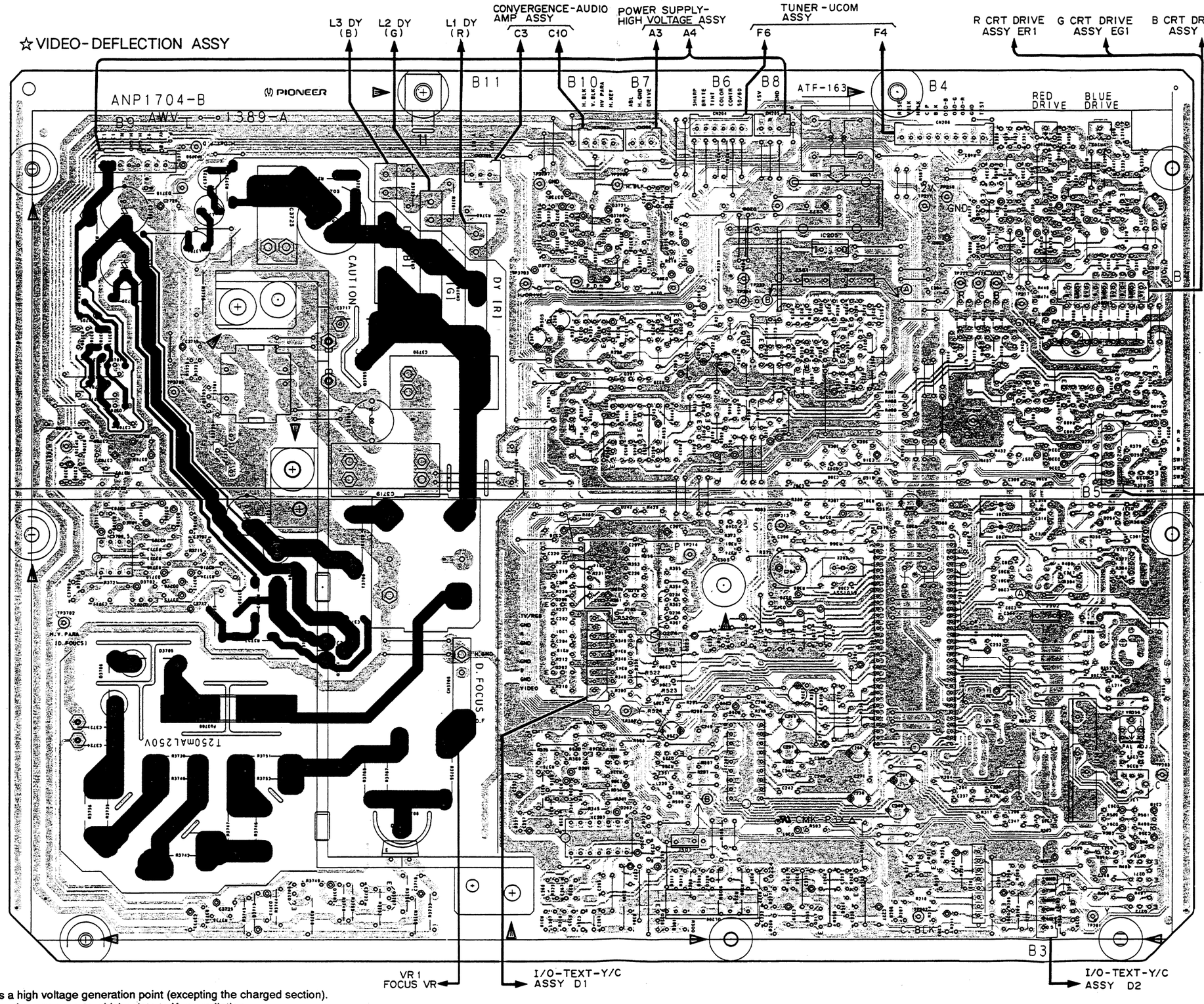


(22) - 2 **Both sides of R3734 (PAL)**
V range : 0.5V/div.
H range : 5msec/div.
(V period)



PCB-3

☆VIDEO-DEFLECTION ASSY



Q252 Q263
Q254 Q265
Q3709 Q3711
Q235
Q266 IC205

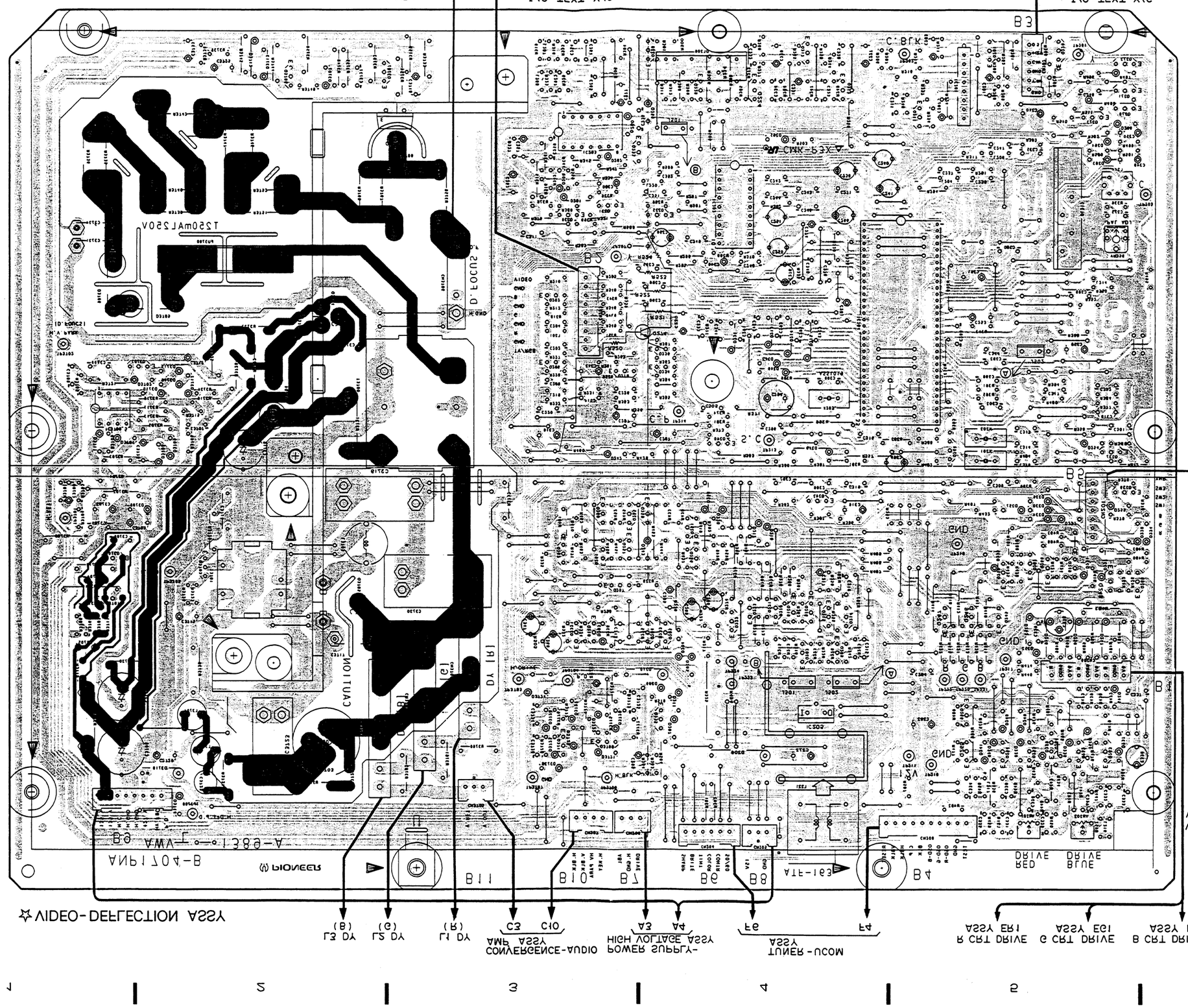
Q203
Q209
Q204
Q205 Q245
Q210
Q232 Q247
Q214 Q221 Q219
Q207
Q216 Q223 Q3701
Q248 Q267 Q3705
Q3703
Q250 Q269 Q3700
Q259 Q255
Q262 Q257 Q251
Q242
Q239

Q244 Q237
Q240
IC3700
Q218
Q234 Q3702
Q206
Q236
Q274
IC204
Q3704
Q202

Q225 Q238
Q231
IC202
Q233
Q3708
IC203
Q273 Q211
Q270 Q212
Q271 Q224
Q229
IC201
Q272 Q220 Q3706
Q201 Q3707
Q217
Q228

■ mark shows a high voltage generation point (excepting the charged section).
• Parts marked ☆ are important parts which relate to X-ray radiation.
If any of these parts need to replaced. Always replace with specified parts.

• This diagram is viewed from the mounted parts side.



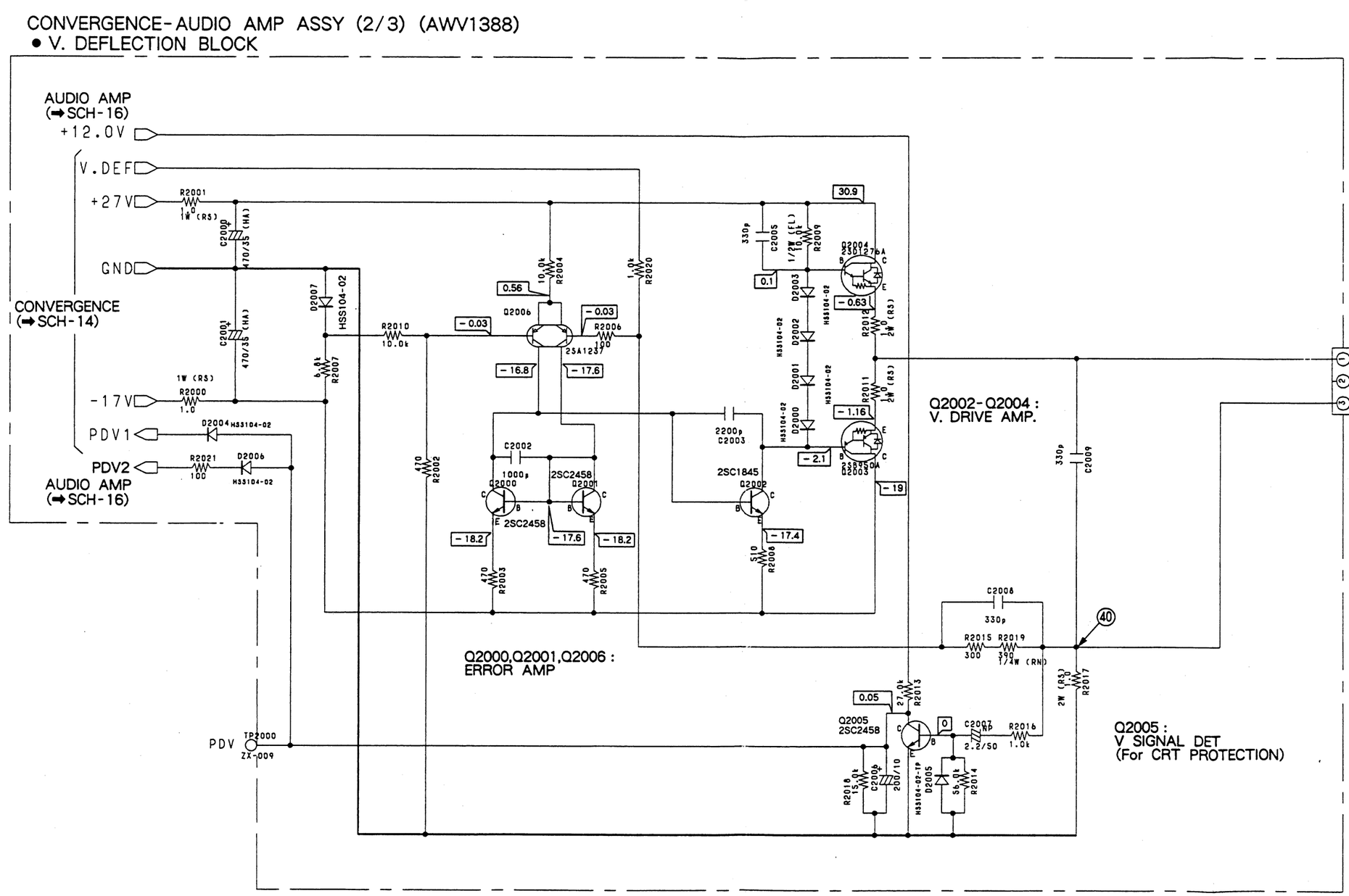
- Parts marked ☆ are important parts which relate to X-ray radiation.
- Parts marked ■■■ mark shows a high voltage generation point (excepting the enlarged section).

If you replace these parts used to replaced. Always replace with specified parts.

● This diagram is viewed from the foil side.

5.15 CONVERGENCE-AUDIO AMP ASSY (2/3)

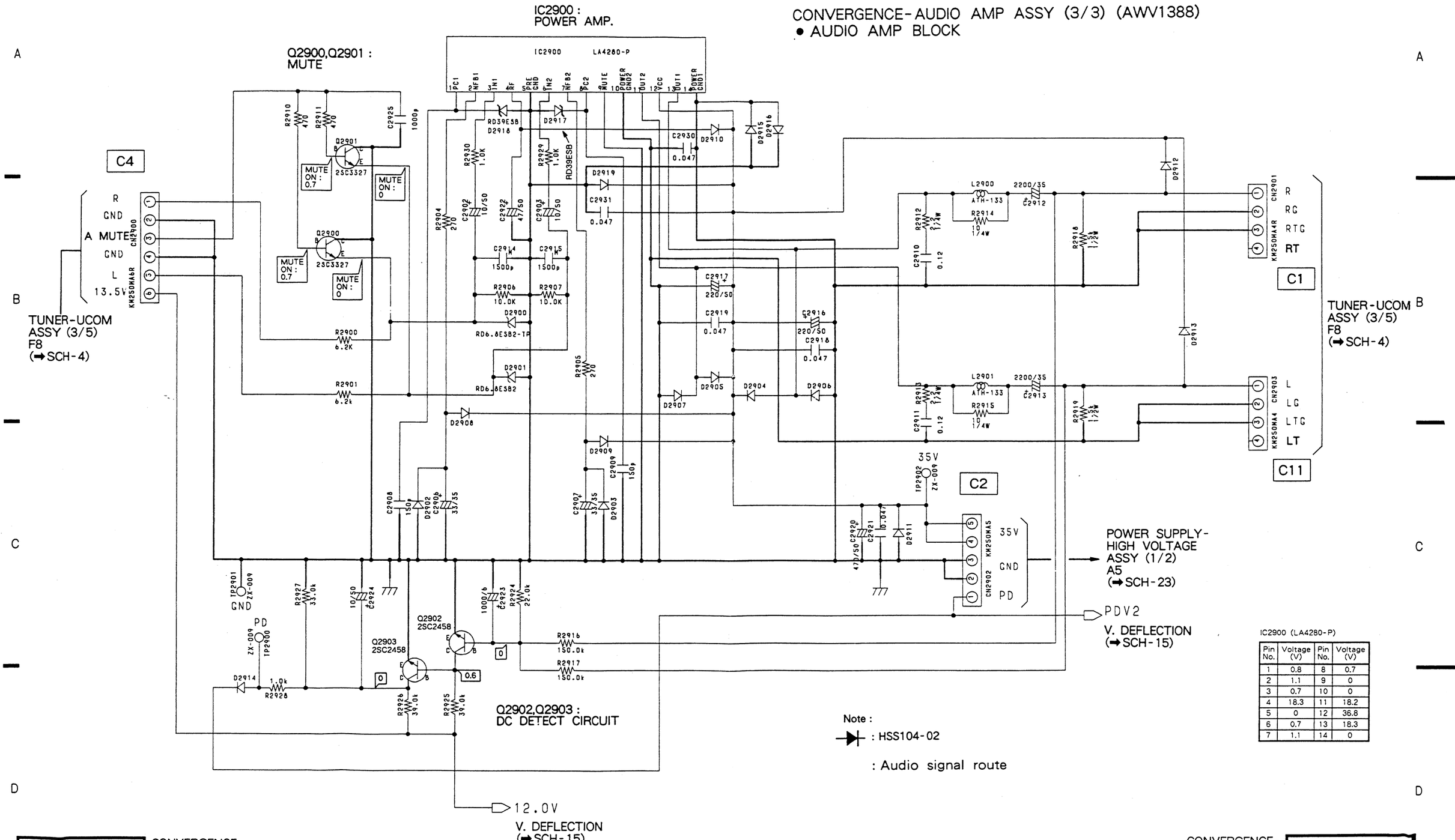
CONVERGENCE-AUDIO AMP ASSY (2/3) (AWV1388)
• V. DEFLECTION BLOCK



5.16 CONVERGENCE-AUDIO AMP ASSY (3/3)

SCH-16

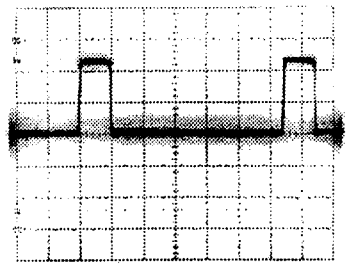
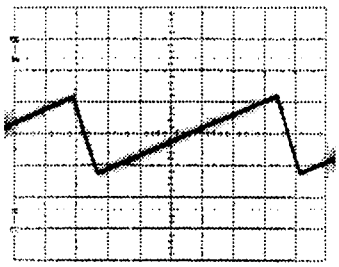
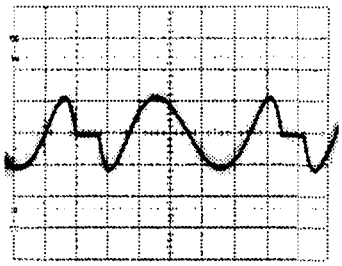
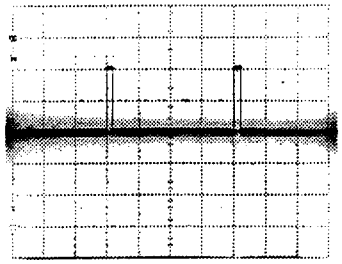
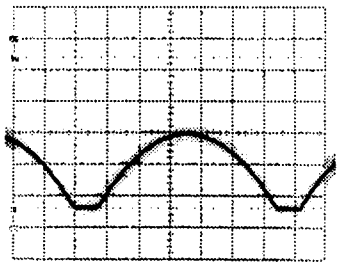
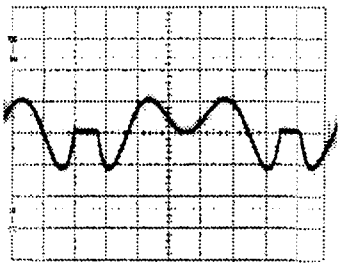
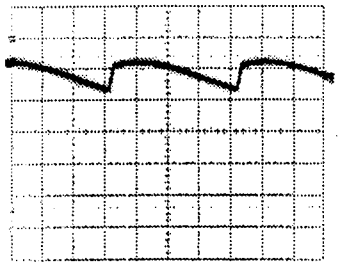
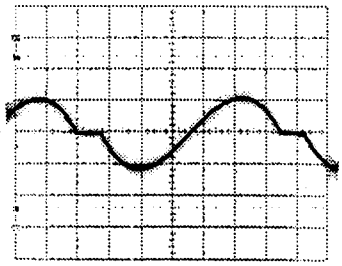
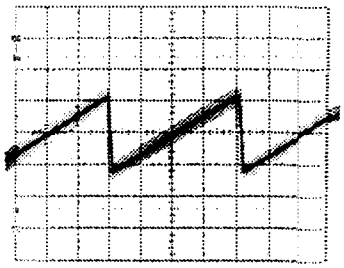
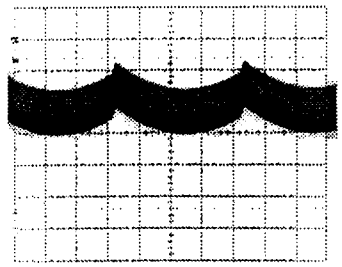
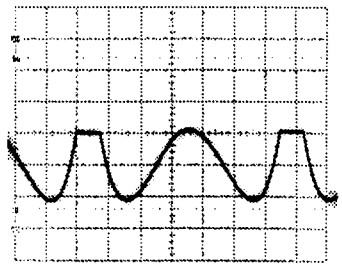
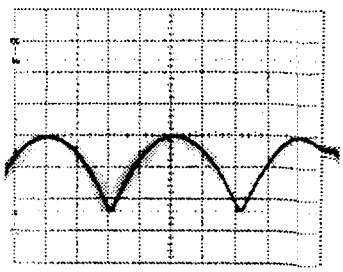
CONVERGENCE-AUDIO AMP ASSY (3/3) (AWV1388)
● AUDIO AMP BLOCK



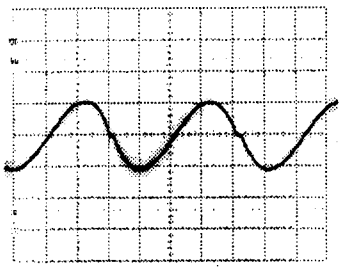
IC2900 (LA4280-P)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.8	8	0.7
2	1.1	9	0
3	0.7	10	0
4	18.3	11	18.2
5	0	12	36.8
6	0.7	13	18.3
7	1.1	14	0

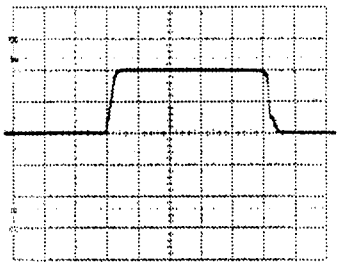
• Waveformes at CONVERGENCE - AUDIO AMP ASSY

① **TP5401 (H. BLK)** V range : 5V/div. H range : 10 μsec/div. 	⑤ **IC5402 pin 4 (H1 : NOKO. OUT)** V range : 1V/div. H range : 10 μsec/div. 	⑨ **IC5402 pin 8 (H5 : 5D. OUT)** V range : 1V/div. H range : 10 μsec/div. 
② **TP5402 (V. BLK)** V range : 5V/div. H range : 5msec/div. 	⑥ **IC5402 pin 5 (H2 : PARA. OUT)** V range : 1V/div. H range : 10 μsec/div. 	⑩ **IC5402 pin 10 (H6 : 6D. OUT)** V range : 1V/div. H range : 10 μsec/div. 
③ **CN5401 pin 3 (H KEY)** V range : 1V/div. H range : 5msec/div. 	⑦ **IC5402 pin 6 (H3 : 3D. OUT)** V range : 1V/div. H range : 10 μsec/div. 	⑪ **IC5403 pin 4 (V1 : NOKO. OUT)** V range : 1V/div. H range : 5msec/div. 
④ **CN5401 pin 4 (HV PARA)** V range : 1V/div. H range : 5msec/div. 	⑧ **IC5402 pin 7 (H4 : 4D. OUT)** V range : 1V/div. H range : 10 μsec/div. 	⑫ **IC5403 pin 5 (V2 : PARA OUT)** V range : 1V/div. H range : 5msec/div. 

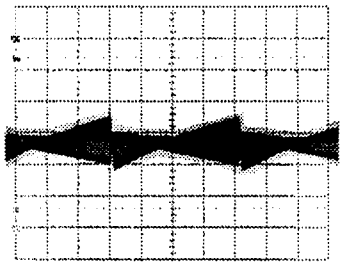
(13) **IC5403 pin 6 (V3 :3D. OUT)**
V range : 1V/div.
H range : 5msec/div.



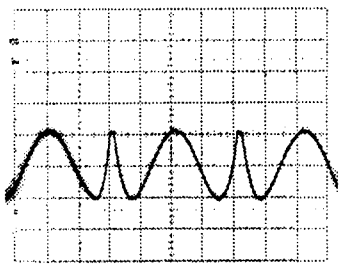
(17) **Q5403 Emitter**
V range : 5V/div.
H range : 2 μsec/div.



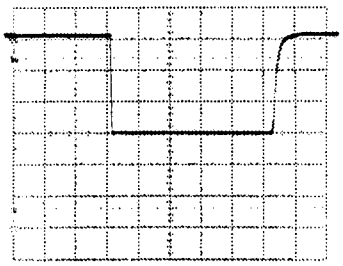
(21) **TP5105 (GH)**
V range : 50mV/div.
H range : 5msec/div.



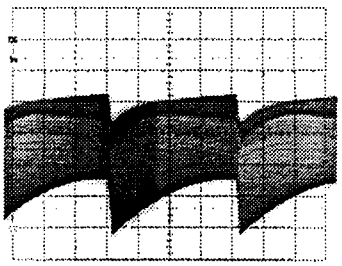
(14) **IC5403 pin 7 (V4 : 4D. OUT)**
V range : 1V/div.
H range : 5msec/div.



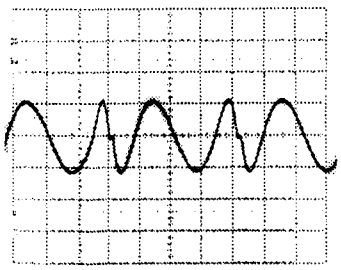
(18) **Q5404 Collector**
V range : 10V/div.
H range : 2 μsec/div.



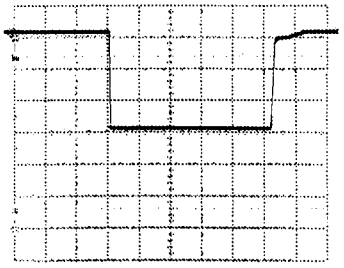
(22) **TP5106 (RH)**
V range : 50mV/div.
H range : 5msec/div.



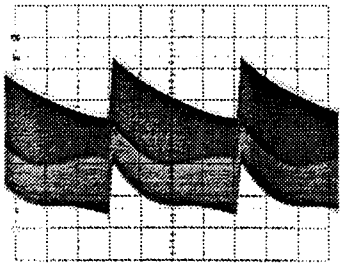
(15) **IC5403 pin 8 (V5 : 5D. OUT)**
V range : 1V/div.
H range : 5msec/div.



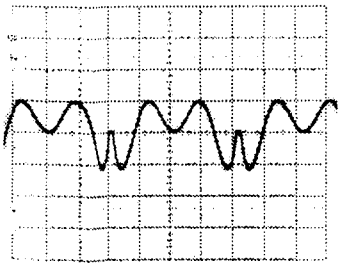
(19) **Q5405 Emitter**
V range : 10V/div.
H range : 2 μsec/div.



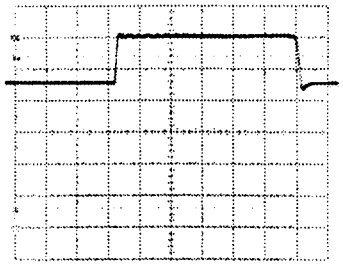
(23) **TP5107 (BH)**
V range : 50mV/div.
H range : 5msec/div.



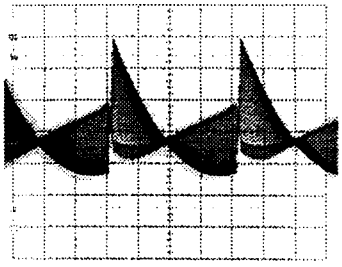
(16) **IC5403 pin 10 (V6 : 6D. OUT)**
V range : 1V/div.
H range : 5msec/div.



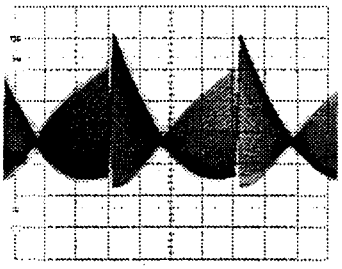
(20) **Q5406 Collector**
V range : 10V/div.
H range : 2 μsec/div.



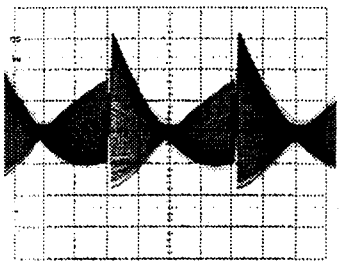
(24) **TP5108 (GV)**
V range : 0.1V/div.
H range : 5msec/div.



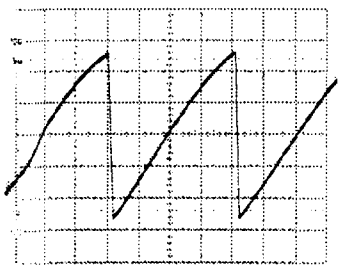
(25) **TP5109 (RV)**
V range : 0.1V/div.
H range : 5msec/div.



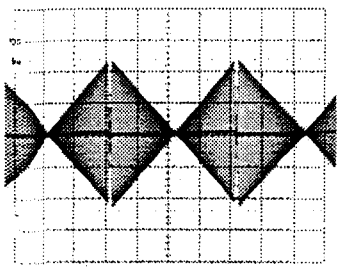
(26) **TP5110 (BV)**
V range : 0.1V/div.
H range : 5msec/div.



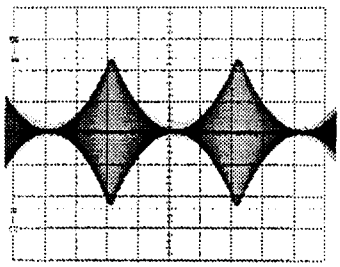
(27) **IC5405 pin 1 (V DEF)**
V range : 0.5V/div.
H range : 5msec/div.



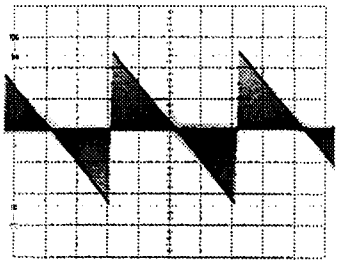
(28) **Connector for GH pin 11**
V range : 0.5V/div.
H range : 5msec/div.



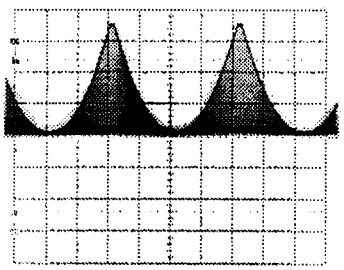
(29) **Connector for RH pin 11**
V range : 0.5V/div.
H range : 5msec/div.



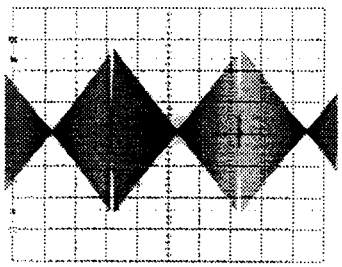
(30) **Connector for BH pin 11**
V range : 0.5V/div.
H range : 5msec/div.



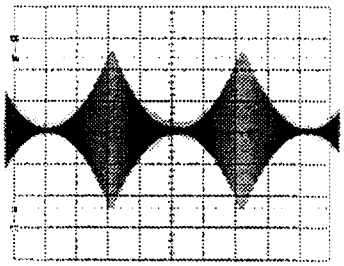
(31) **Connector for GV pin 11**
V range : 0.5V/div.
H range : 5msec/div.



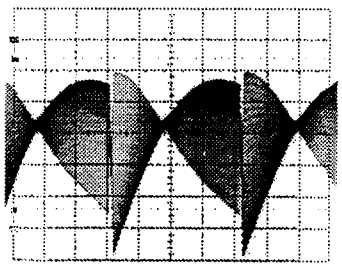
(32) **Connector for RV pin 11**
V range : 0.5V/div.
H range : 5msec/div.



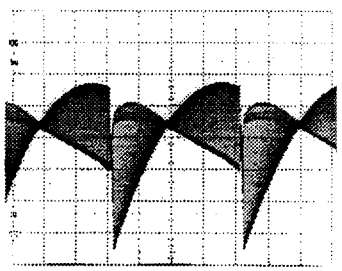
(33) **Connector for BV pin 11**
V range : 0.5V/div.
H range : 5msec/div.



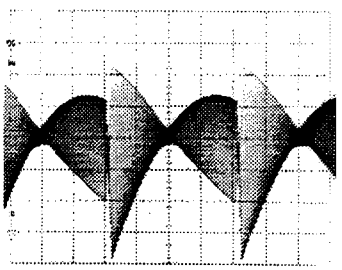
(34) **CN5417 pin 2 (VR : RV)**
V range : 0.5V/div.
H range : 5msec/div.



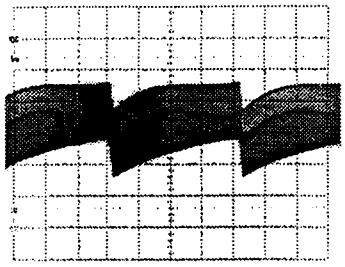
(35) **CN5416 pin 2 (VR : GV)**
V range : 0.5V/div.
H range : 5msec/div.



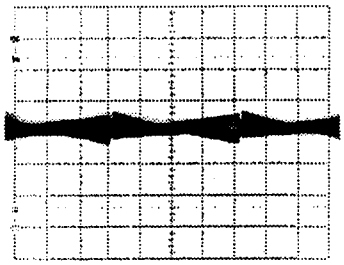
(36) **CN5415 pin 2 (VR : BV)**
V range : 0.5V/div.
H range : 5msec/div.



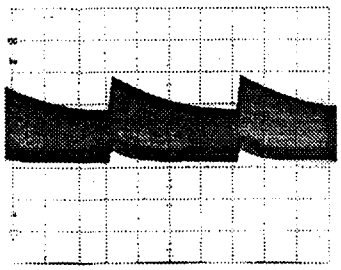
(37) **CN5415 pin 4 (HR : BH)**
V range : 0.5V/div.
H range : 5msec/div.



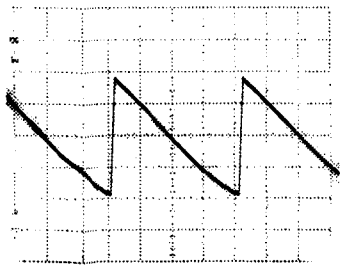
(38) **CN5416 pin 4 (HR : GH)**
V range : 0.5V/div.
H range : 5msec/div.



(39) **CN5417 pin 4 (HR : RH)**
V range : 0.5V/div.
H range : 5msec/div.



(40) **CN2000 pin 3 (V. RET)**
V range : 0.5V/div.
H range : 5msec/div.



5.17 CONVERGENCE GH ASSY

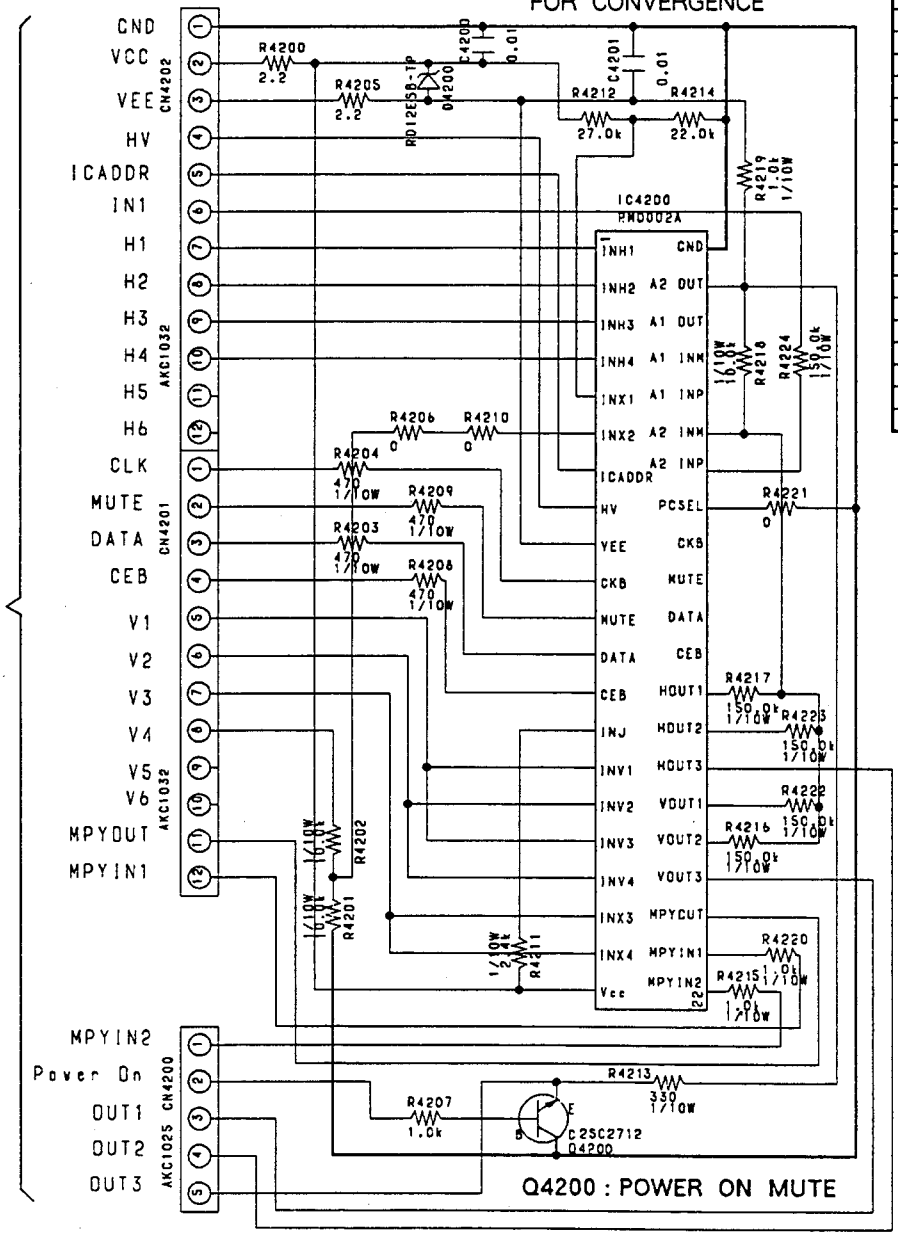
SCH-17

CONVERGENCE GH ASSY (AWZ4500)

IC4200 :
D/A CONVERTER
FOR CONVERGENCE

IC4200 (PM0002A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.01	22	0
2	-0.97	23	0
3	0.03	24	0
4	-0.94	25	1.5
5	3.7	26	0
6	-0.5	27	0
7	0	28	0.3
8	5	29	0.1
9	-4.8	30	0.3
10	-	31	N.C.
11	-	32	N.C.
12	-	33	N.C.
13	-	34	N.C.
14	1.9	35	0
15	-0.05	36	-
16	-0.82	37	-
17	-0.05	38	0
18	-0.82	39	0
19	0.08	40	-2
20	0.08	41	0
21	5	42	0



CONVERGENCE-
AUDIO AMP
ASSY (1/3)
(➡SCH-14)

CONVERGENCE
GH ASSY

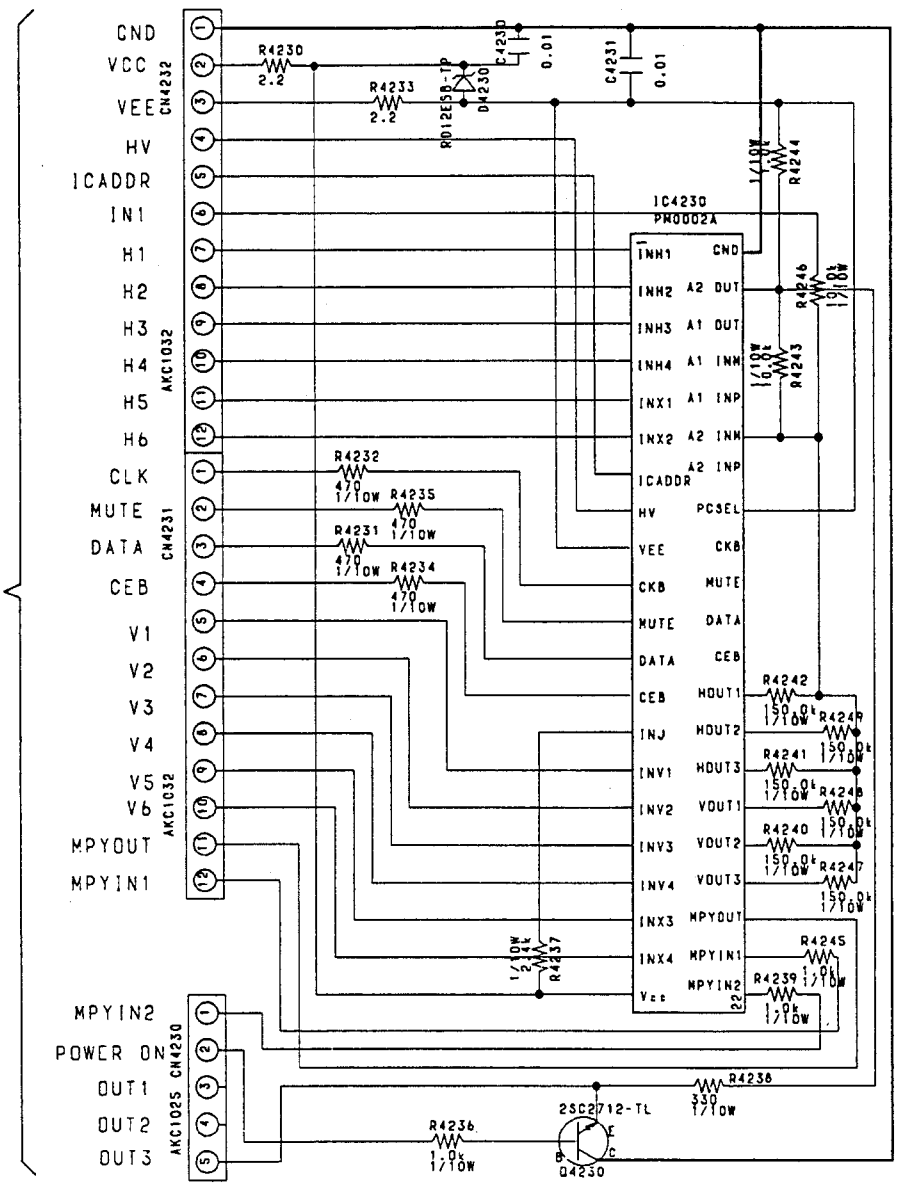
SCH-17

5.18 CONVERGENCE H1 ASSY

SCH-18

CONVERGENCE H1 ASSY (AWZ4501)

IC4230 :
D/A CONVERTER
FOR CONVERGENCE



IC4230 (PM0002A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.01	22	0
2	-0.97	23	0
3	-0.03	24	0
4	-0.94	25	0
5	-0.03	26	0
6	0.14	27	0
7	5	28	0
8	5	29	0
9	-4.8	30	0.3
10	-	31	N.C.
11	-	32	N.C.
12	-	33	N.C.
13	-	34	N.C.
14	1.9	35	-4.8
15	-0.05	36	N.C.
16	-0.82	37	-
17	0.08	38	0
18	-1.1	39	0
19	0.05	40	-1.7
20	0.15	41	-0.1
21	-	42	0

CONVERGENCE-
AUDIO AMP
ASSY (1/3)
(➡SCH-14)

Q4230 : POWER ON MUTE

SCH-18 CONVERGENCE H1 ASSY

5.19 CONVERGENCE H2 ASSY

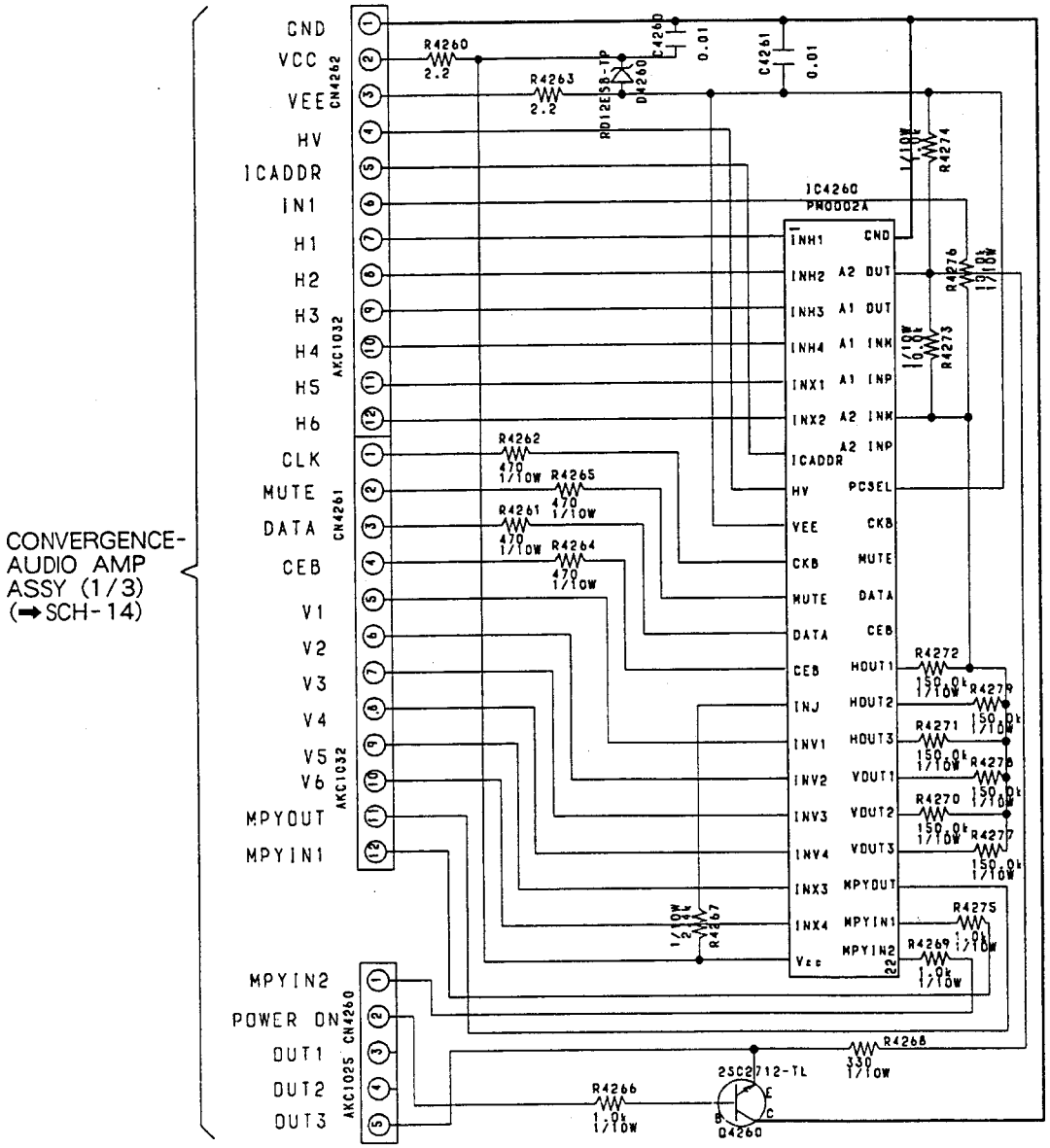
SCH-19

CONVERGENCE H2 ASSY (AWZ4502)

IC4260 :
D/A CONVERTER
FOR CONVERGENCE

IC4260 (PM0002A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.01	22	-0.4
2	-0.97	23	0
3	-0.02	24	0
4	-0.94	25	0
5	-0.03	26	0
6	0.14	27	0
7	-4.9	28	0
8	5	29	0.3
9	-4.8	30	0.3
10	-	31	N.C.
11	-	32	N.C.
12	-	33	N.C.
13	-	34	N.C.
14	1.9	35	-4.8
15	-0.05	36	N.C.
16	-0.82	37	-
17	0.08	38	0
18	-1.1	39	0
19	0.05	40	-1.4
20	0.15	41	0
21	5	42	0



Q4260 : POWER ON MUTE

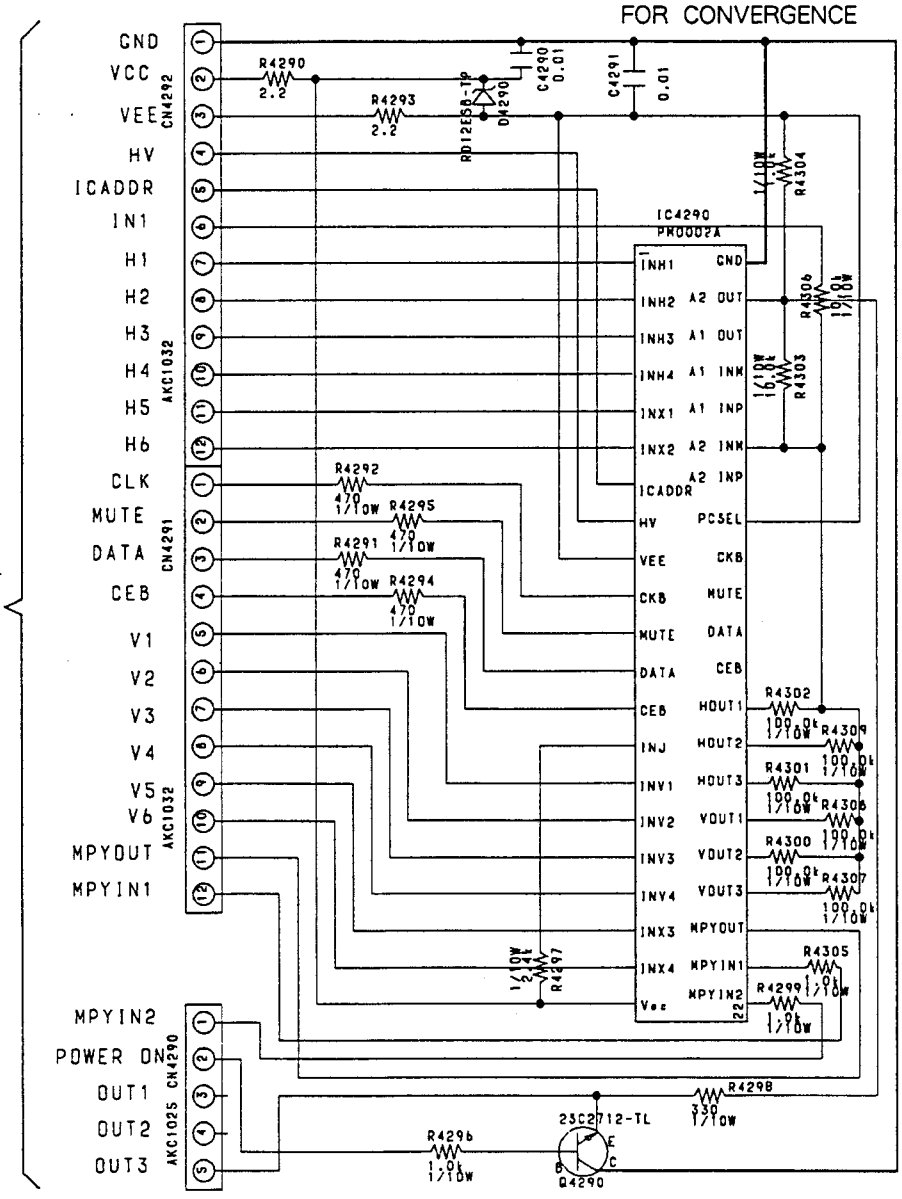
CONVERGENCE
H2 ASSY

SCH-19

5.20 CONVERGENCE V1 ASSY

SCH-20

CONVERGENCE V1 ASSY (AWZ4503)



IC4290 : D/A CONVERTER FOR CONVERGENCE

IC4290 (PM0002A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.01	22	-0.5
2	-0.97	23	-0.4
3	-0.02	24	0.3
4	-0.94	25	-0.2
5	-0.03	26	0
6	0.14	27	0
7	0	28	0
8	0	29	0.1
9	-4.8	30	0.1
10	-	31	N.C.
11	-	32	N.C.
12	-	33	N.C.
13	-	34	N.C.
14	1.9	35	-4.8
15	-0.05	36	N.C.
16	-0.82	37	-
17	-0.05	38	0
18	-0.82	39	0
19	0.08	40	-1.1
20	0.08	41	0
21	5	42	0

CONVERGENCE-AUDIO AMP ASSY (1/3) (➡SCH-14)

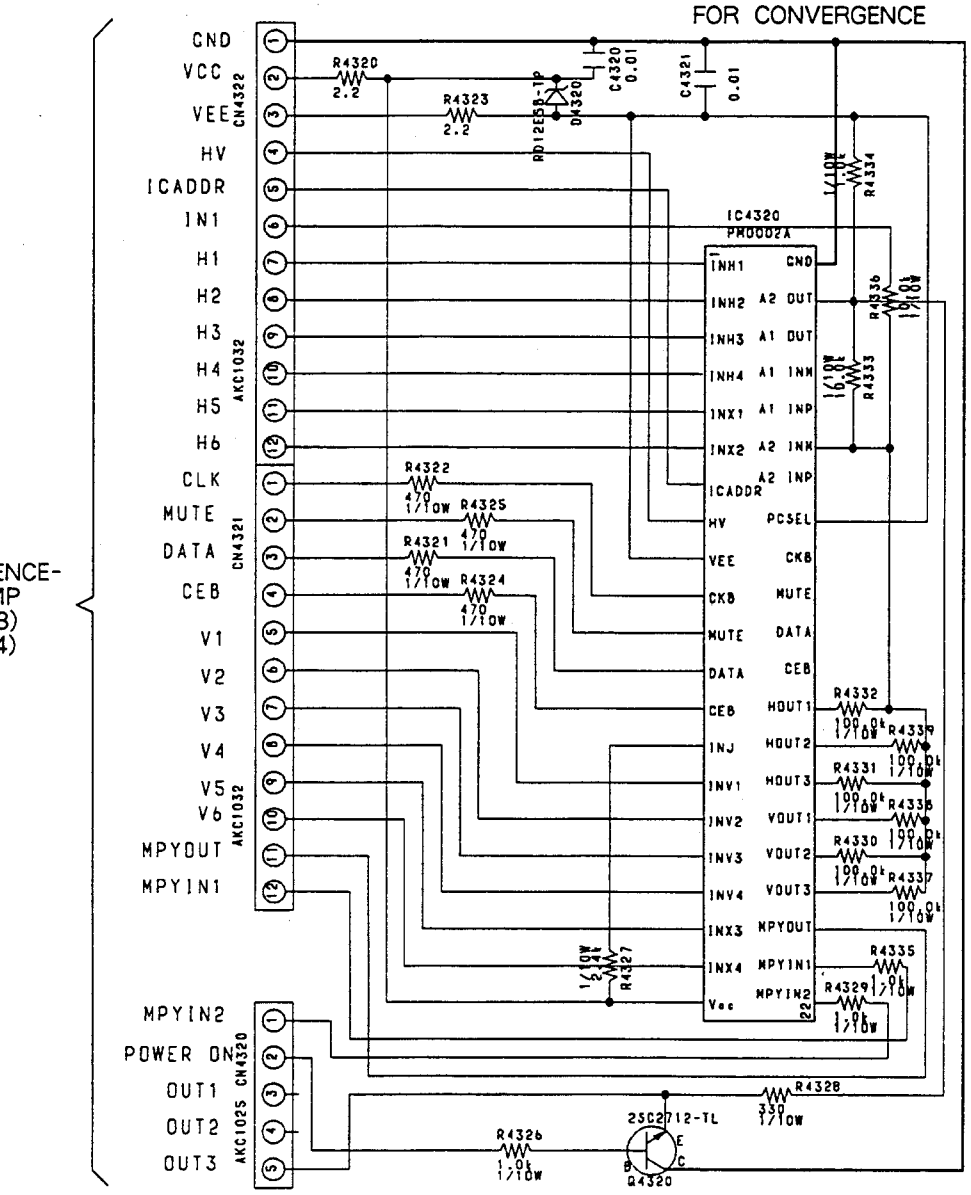
Q4290 : POWER ON MUTE

SCH-20 CONVERGENCE V1 ASSY

5.21 CONVERGENCE V2 ASSY

SCH-21

CONVERGENCE V2 ASSY (AWZ4504)



Q4320 : POWER ON MUTE

IC4320 (PM0002A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.01	22	0
2	-0.97	23	0
3	-0.02	24	0
4	-0.94	25	-0.2
5	-0.03	26	0
6	0.14	27	0
7	5	28	0
8	0	29	0.1
9	-4.9	30	0
10	-	31	N.C.
11	-	32	N.C.
12	-	33	N.C.
13	-	34	N.C.
14	1.9	35	-4.8
15	-0.05	36	N.C.
16	-0.82	37	-
17	-0.05	38	0
18	-0.82	39	0
19	0.08	40	-1.4
20	0.08	41	0
21	5	42	0

CONVERGENCE V2 ASSY

SCH-21

5.22 CONVERGENCE V3 ASSY

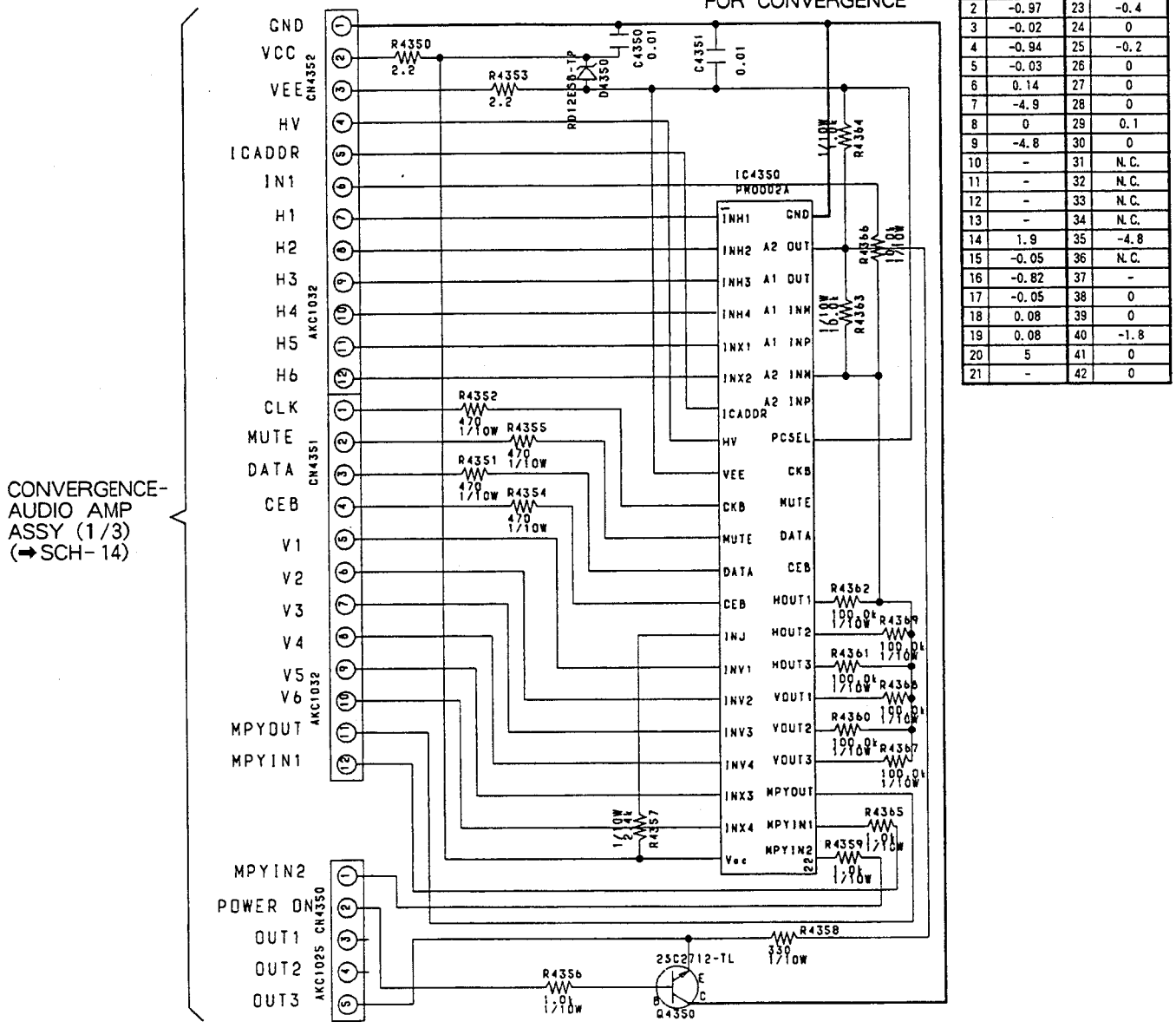
SCH-22

CONVERGENCE V3 ASSY (AWZ4505)

IC4350 :
D/A CONVERTER
FOR CONVERGENCE

IC4350 (PM0002A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.01	22	0
2	-0.97	23	-0.4
3	-0.02	24	0
4	-0.94	25	-0.2
5	-0.03	26	0
6	0.14	27	0
7	-4.9	28	0
8	0	29	0.1
9	-4.8	30	0
10	-	31	N.C.
11	-	32	N.C.
12	-	33	N.C.
13	-	34	N.C.
14	1.9	35	-4.8
15	-0.05	36	N.C.
16	-0.82	37	-
17	-0.05	38	0
18	0.08	39	0
19	0.08	40	-1.8
20	5	41	0
21	-	42	0



CONVERGENCE-AUDIO AMP ASSY (1/3) (➡SCH-14)

Q4350 : POWER ON MUTE

SCH-22 CONVERGENCE V3 ASSY

mark shows the charged section (Power supply primary side circuit).
mark shows a high voltage generation point (excepting the charged section).
• Parts marked ☆ are important parts which relate to X-ray radiation.
If any of these parts need to replaced. Always replace with specified parts.

• This diagram is viewed from the mounted parts side.

☆POWER SUPPLY-
HIGH VOLTAGE ASSY

TUNER-UCOM
ASSY F1

CONVERGENCE-
AUDIO AMP ASSY
C8 C2

TUNER-UCOM
ASSY F2

VIDEO-D
ASSY
B9

AWV1386-A

ANP1701-C

NEUTRAL
LIVE
AC POWER
CORD

CAUTION
-FOR CONTINUED PROTECTION AGAINST FIRE HAZARD:
REPLACEMENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY

T6.3AL250V

AC INPUT
ASSY

ANP1702-A

SECONDARY
PRIMARY

T800MAL250V

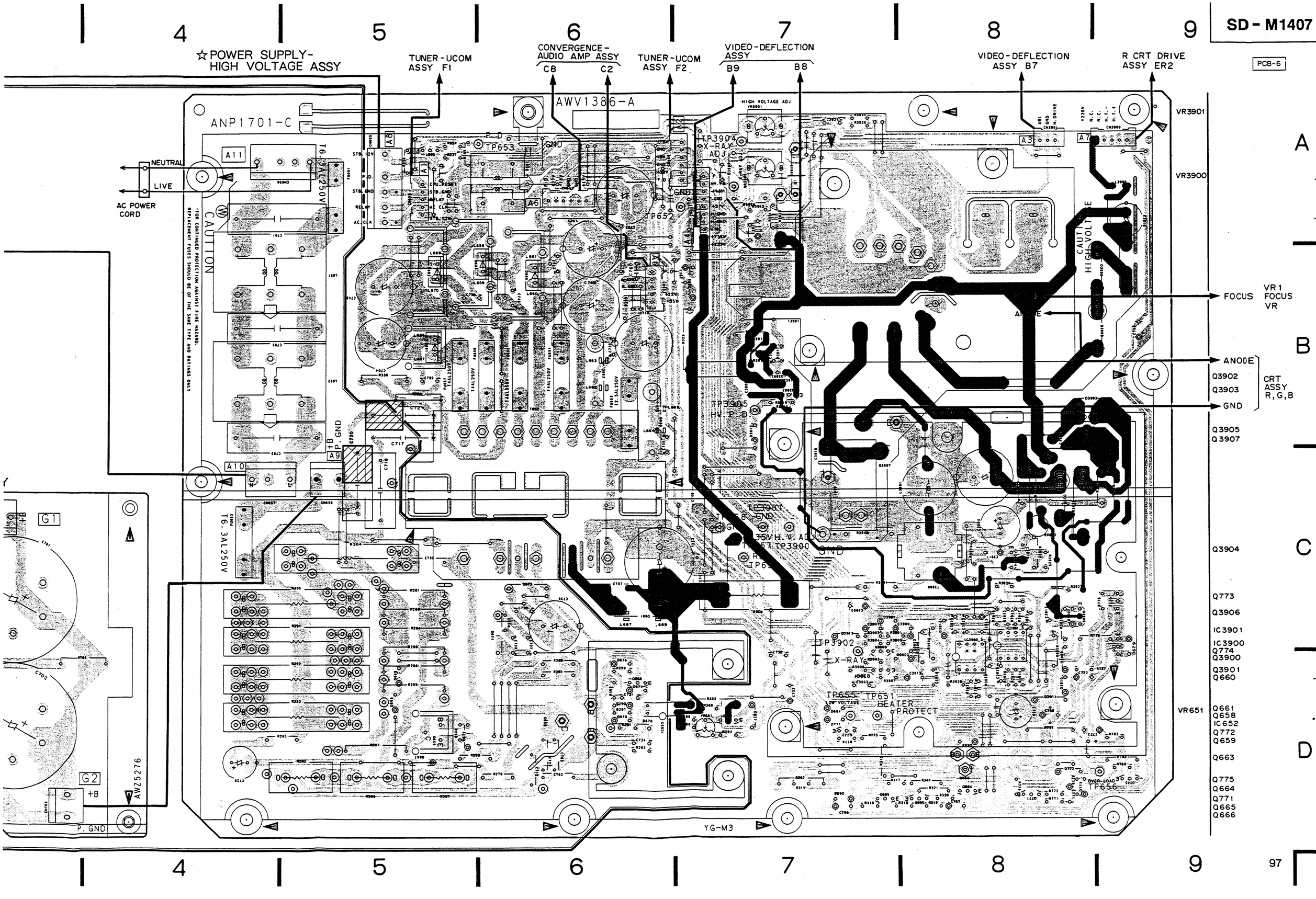
Q402
Q400
Q401
Q403
Q404
IC501

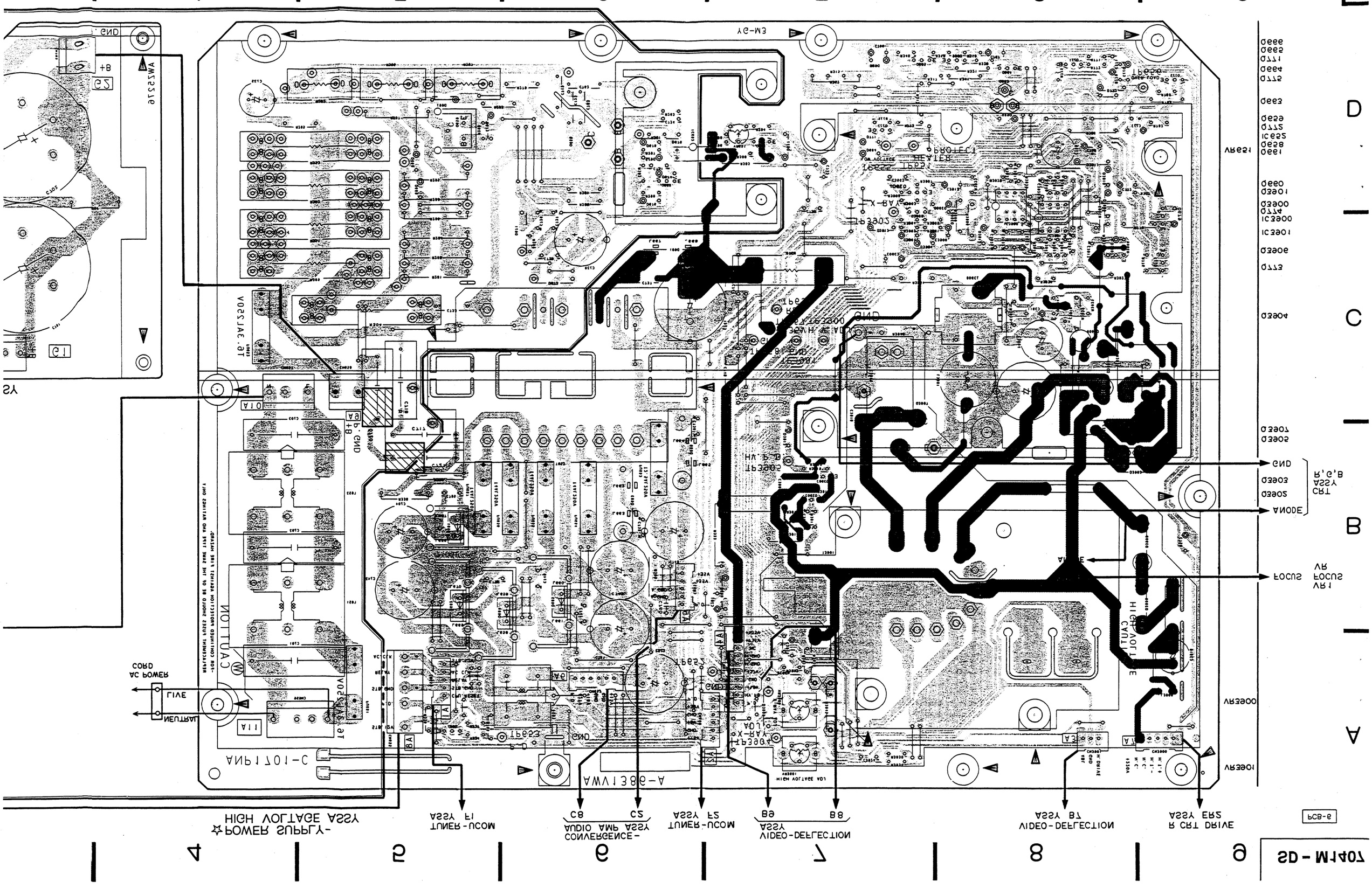
ELECTROLYTIC
CAPACITOR ASSY

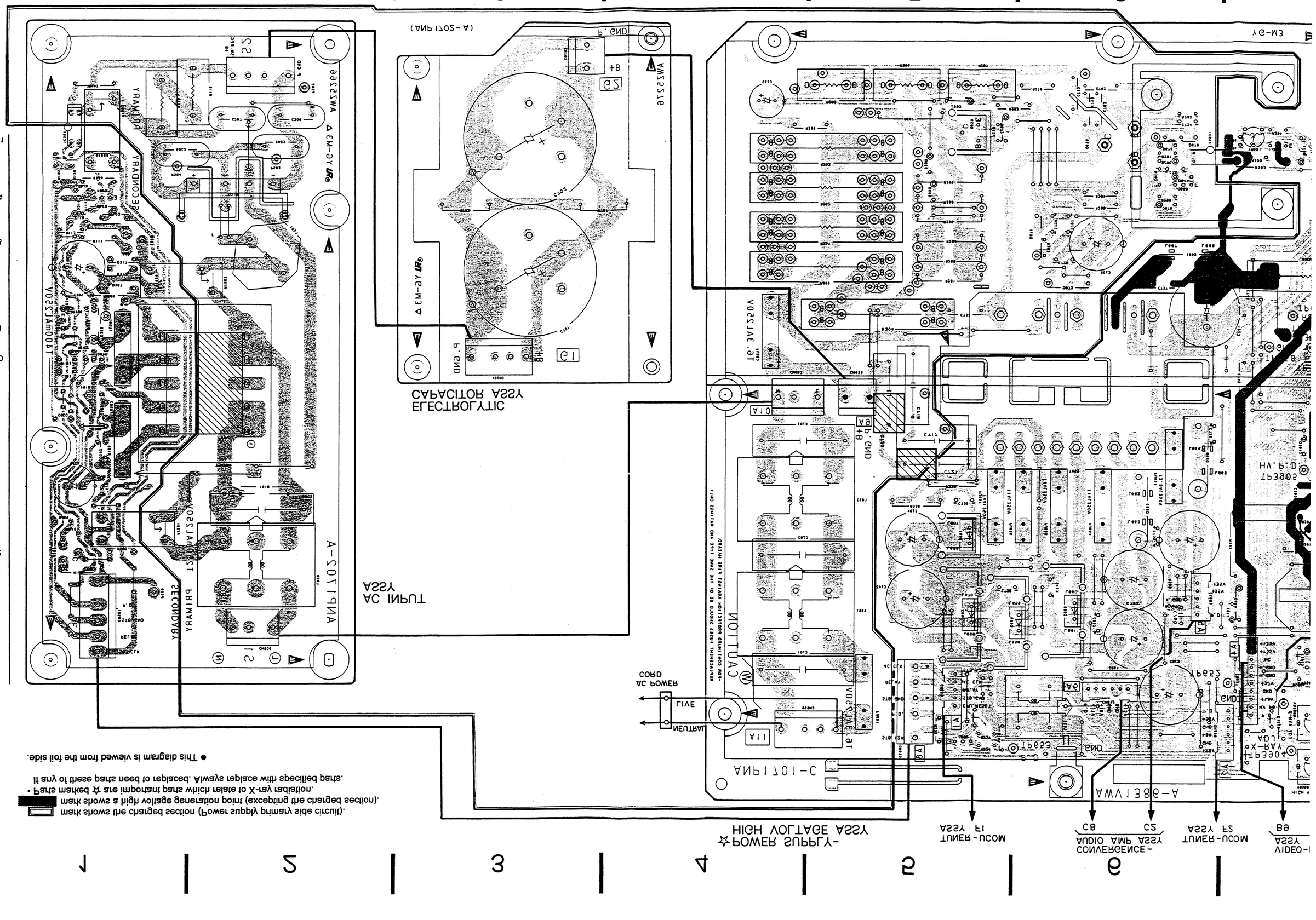
YG-M3
AWZ5266
AWZ5276
(ANP1702-A)

P.GND
+B
G1
G2

YG-M3


4
5
6
7
8
9
☆POWER SUPPLY-HIGH VOLTAGE ASSY
TUNER-UCOM ASSY F1
CONVERGENCE-AUDIO AMP ASSY
C8
C2
TUNER-UCOM ASSY F2
VIDEO-DEFLECTION ASSY
B9
B8
VIDEO-DEFLECTION ASSY B7
R CRT DRIVE ASSY ER2
PCB-6
ANP1701-C
AWV1386-A
NEUTRAL
LIVE
AC POWER CORD
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACEMENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY
T6.3AL250V
T2.5AL250V
TP653
GND
TP652
TP3904
X-RAY ADJ
HIGH VOLTAGE ADJ
VR3901
VR3900
TP3905
H.V.P.B
TP3902
X-RAY
TP655
LOW VOLTAGE
TP651
HEATER PROTECT
TP656
OVER-LOAD
FOCUS
VR1
FOCUS VR
ANODE
Q3902
Q3903
GND
CRT ASSY R,G,B
Q3905
Q3907
Q3904
Q773
Q3906
IC3901
IC3900
Q774
Q3900
Q3901
Q660
VR651
Q661
Q658
IC652
Q772
Q659
Q663
Q775
Q664
Q771
Q665
Q666
G1
G2
+B
P.GND
AWZ5276
YG-M3
A
B
C
D
97
10


HIGH VOLTAGE ASSY
POWER SUPPLY
TUNER-UCOM ASSY F1
AUDIO AMP ASSY CONVERGENCE
TUNER-UCOM ASSY F5
VIDEO-DEFLECTION ASSY
VIDEO-DEFLECTION ASSY F8
R CRT DRIVE ASSY ER5
CRT ASSY R,G,B
ANODE
FOCUS
AC POWER CORD
LIVE
NEUTRAL
AC INLET
HIGH VOLTAGE
GND
B+
SD-M10A7



- mark shows the circled section (Power supply primary side circuit).
- mark shows a high voltage generation point (excepting the circled section).
- Parts marked ☆ are important parts which relate to X-ray radiation.
  If you to these parts need to replaced. Always replace with specified parts.
- This diagram is viewed from the foil side.

5.25 FRONT CONTROL AND RECEIVER ASSEMBLIES

SCH-25

FRONT CONTROL ASSY (AWZ5267)

IC851 (PD5136)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	11	0
2	0	12	0
3	3.1	13	0
4	0	14	0
5	3.1	15	0
6	0	16	0
7	3.1	17	0
8	3.1	18	0
9	3.1	19	0
10	3.1	20	3

S852 SET, S858 FACTORY, S861 VOL+, S864 CH-
S853 MENU, S856 SELECT ADJ+, S859 FINE TUNE, S862 VOL-, S865 PR/CH
S851 POWER, S857 SELECT ADJ-, S860 TV SYSTEM, S863 CH+, S866 INPUT

X851 : 480kHz

IC851 : KEY INPUT MICROCOMPUTER

AV3
S-VIDEO
VIDEO
CN85SAKP1081-A
CN65A AKB1055
H1
CN853 KM250M4AR
+9V
C
GND
Y
I/O-TEXT-Y/C ASSY (1/5) D3 (➡SCH-7)

Q855,Q856 : BUFFER

RECEIVER ASSY (AWZ5268)
REMOTE SENSOR
X852
AXX1033
J852 DHH03-100-2877
GND
REM
STB + 5V

J851
GND
REM
STB + 5V
DHH03-100-2877
CN852KM250MA3R
H4
TUNER-UCOM ASSY (5/5) F7 (➡SCH-6)

H3
+12.0V
DPD
KEY
CN851KM4A3CN851
TUNER-UCOM ASSY (5/5) F7 (➡SCH-6)

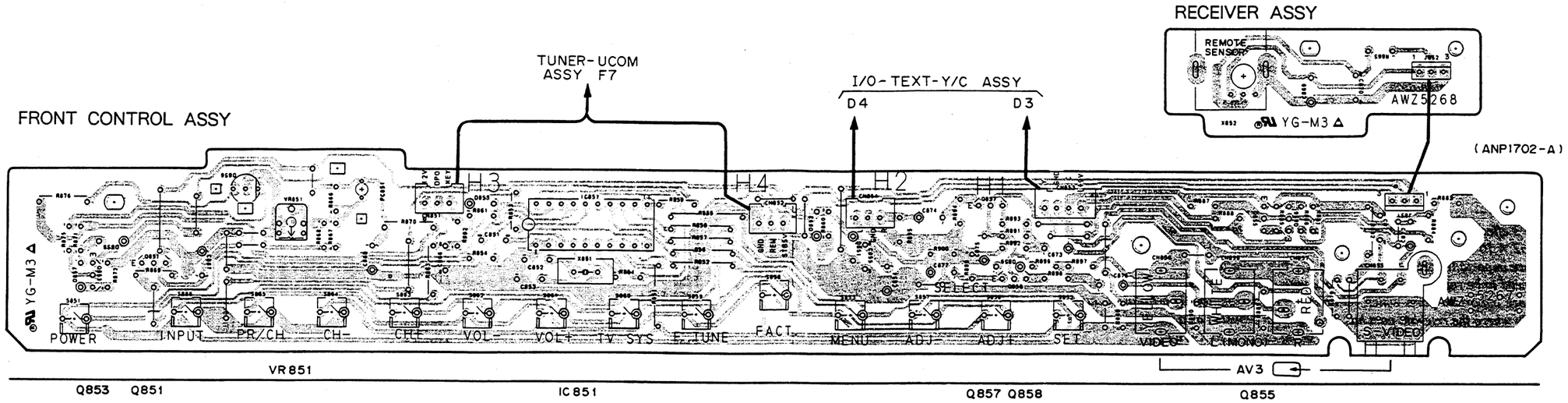
Q851 : DPO BUFFER

Q853 : LED DRIVER (POWER IND.)

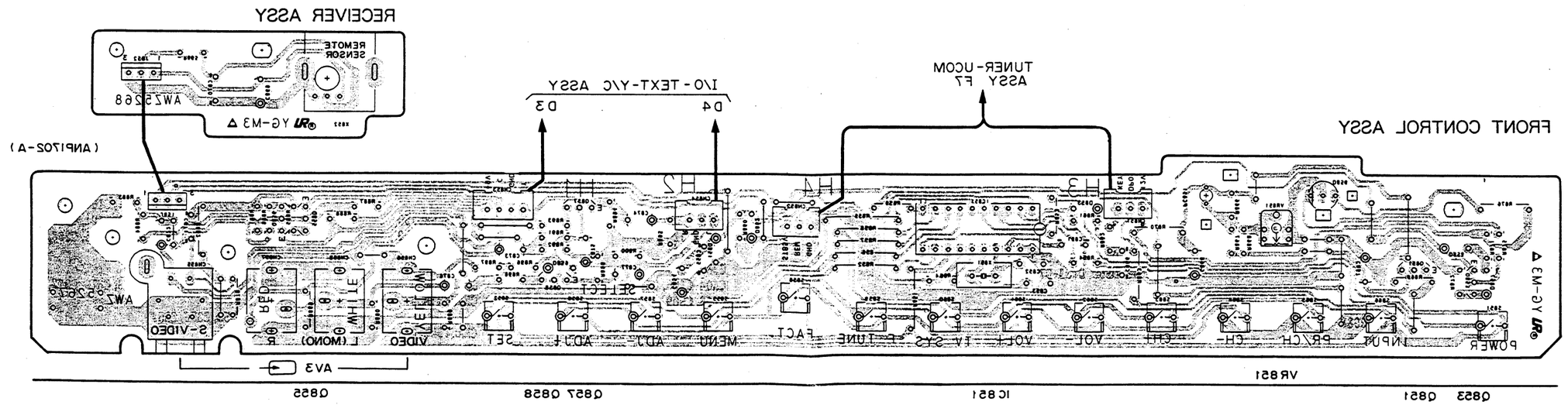
I/O-TEXT-Y/C ASSY (1/5) D4 (➡SCH-7)
H2
CN854KM250M3B
R
GND
L
+9V
AV3
R
L
(MONO)
CN856 AKB1056

Q857,Q858 : BUFFER

FRONT CONTROL ASSY, RECEIVER ASSY SCH-25



• This diagram is viewed from the mounted parts side.



• This diagram is viewed from the foil side.

6. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ..... RD1/8PM 5 6 1 J
47k Ω → 47 × 10³ → 473 ..... RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ..... RN2H 0 R 5 K
1 Ω → 010 ..... RS1P 0 1 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ..... RN1/4PC 5 6 2 1 F

- *Parts marked by ☆ are important parts which relate in X-rays radiation. If any of these parts need to be replaced, always replace with specified parts.*
- *Parts marked by ✕ are important parts which relate in X-rays radiation. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself. If any part marked by ✕ is replaced, there is danger of being exposed to X-rays.*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
		TUNER-UCOM ASSY	AWV1385
☆		POWER SUPPLY-HIGH VOLTAGE ASSY	AWV1386
NSP		AC-FRONT-CRT ASSY	AWV1387
		├ AC INPUT ASSY	AWZ5266
		├ FRONT CONTROL ASSY	AWZ5267
		├ RECEIVER ASSY	AWZ5268
		├ R CRT DRIVE ASSY	AWZ5269
		├ G CRT DRIVE ASSY	AWZ5270
		├ B CRT DRIVE ASSY	AWZ5271
		└ ELECTROLYTIC CAPACITOR ASSY	AWZ5276
		CONVERGENCE-AUDIO AMP ASSY	AWV1388
NSP		└ CONVERGENCE MODULE ASSY	AWV1279
		├ CONVERGENCE GH ASSY	AWZ4500
		├ CONVERGENCE H1 ASSY	AWZ4501
		├ CONVERGENCE H2 ASSY	AWZ4502
		├ CONVERGENCE V1 ASSY	AWZ4503
		├ CONVERGENCE V2 ASSY	AWZ4504
		└ CONVERGENCE V3 ASSY	AWZ4505
☆		VIDEO-DEFLECTION ASSY	AWV1389
NSP		TERMINAL BOARD ASSY	AWV1390
		├ I/O-TEXT-Y/C ASSY	AWZ5272
		└ AV-2 ASSY	AWZ5273

TUNER-UCOM ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC301		CF70088
	IC251		LA7975
	IC102		MC14052BCP
	IC305, IC502		MC34064P
	IC103		MC7812CT
	IC104		NJM7805FAS
	IC504		PD0012A
	IC501		PD5220A
	IC751		TA7630P
	IC300		TL026CP
	IC252		UPC1391HA
	IC101		UPC1820ACT
	IC302		UPD6376CX
	IC503		X24C08P
	IC303, IC304		XRA4558-P
	Q101, Q113, Q124, Q510-Q518, Q523, Q545, Q546, Q548, Q550, Q552, Q759		2SA933S
	Q102, Q104, Q105, Q107, Q111, Q114, Q115, Q117, Q120, Q121, Q125, Q251, Q252, Q256, Q259-Q261, Q300-Q302, Q305-Q307, Q501-Q504, Q508, Q509, Q519-Q522, Q524-Q529, Q531-Q536, Q539-Q541, Q544, Q547, Q551, Q751-Q754, Q757, Q758, Q760-Q762		2SC1740S
	Q106, Q108, Q109, Q112		2SC2668
	Q254, Q255, Q755, Q756		2SC3327
	Q530		2SD1406
	Q303, Q542, Q543		2SJ103
	Q304		2SK246
	Q506, Q507		DTC124ES
	Q549		DTC143ES
	Q103, Q110, Q253, Q257, Q258		XDC124ES
	D108-D111, D251, D252, D301-D304, D503-D519, D521, D523, D525-D539, D541-D546, D550, D753-D758		1SS252
	D101, D102, D104, D106, D107		1SS85
	D103		RD33ESB2
	D520		RD5.1ESB2
	D501		RD5.1ESB3
	D752		RD5.6ESB
	D502		RD5.6ESB3
	D751		S5566

Mark	No.	Description	Part No.
COILS AND FILTERS			
	L110		ATC-250
	L253		ATG1030
	L105		ATG1031
	L301-L304, L350, L351, L502, L503, L780, L801-L806		ATX1008
	L300		LAU100J
	L501		LAU180K
	L111, L113		LAU1R2J
	L101-L104, L251, L252		LAU2R2J
	L752, L753		LAU560K
	L108, L114		LAU5R6K
	L106, L107		LAU6R8J
	L751		LAU6R8K
	F252		ATF1047
	F253, F254		ATF1048
	F251		ATF1049
	F103		ATF1051
	F101		ATF1053
	F102, F104		ATF1063
	F108		ATF1099
	F106		ATF1137
	F107		ATF1138
	F105		ATF1140
	F300		ATF1141
	F301		ATF1142
SWITCH			
	S101		ASH1004
CAPACITORS			
	TC501		ACM-022
	C149		CCCCH020C50
	C121, C127, C145, C197, C199		CCCCH030C50
	C140, C142, C198		CCCCH040C50
	C123, C147		CCCCH050C50
	C190		CCCCH080D50
	C144, C206		CCCCH090D50
	C203		CCCCH101J50
	C205		CCCCH120J50
	C118, C530		CCCCH150J50
	C269		CCCCH270J50
	C354, C355		CCCCH271J50
	C177		CCCCH330J50
	C200		CCCCH390J50
	C320		CCCCH680J50
	C525		CCPUSL680J50
	C124-C126, C139		CCPUSL470J50
	C768, C771		CEANP2R2M50
	C380, C381		CEANP4R7M50
	C504-C506, C510-C514, C526, C774, C778		CEAS010M50
	C166, C509		CEAS0R1M50
	C155, C194, C350, C351, C503		CEAS100M50
	C317, C324, C360, C371, C528, C532, C535, C536, C551, C556		CEAS101M10
	C110, C111, C134, C151, C158, C265, C501, C772		CEAS101M25
	C105, C183		CEAS102M16
	C173		CEAS220M25
	C810, C812		CEAS220M50
	C261		CEAS221M16
	C103, C767		CEAS222M16
	C168, C775, C776, C802, C804		CEAS2R2M50
	C753, C759, C773		CEAS331M16
	C521, C801, C803		CEAS3R3M50
	C517		CEAS470M10
	C129, C133, C160, C170, C175, C252, C258, C266, C310, C314, C315, C325, C358, C359, C374, C375, C502, C518, C553, C762-C765, C780, C799		CEAS470M25
	C557		CEAS471M16
	C101		CEAS471M25
	C130, C271, C275		CEAS4R7M50
	C108		CEAS6R8M50
	C516		CEASR22M50
	C174, C809, C811		CEASR47M50
	C104, C148		CEHAQ470M25
	C185		CEHAQ471M16
	C758, C760		CFTXA124J50
	C751, C752		CFTXA154J50
	C116, C117, C122, C128, C132, C141, C143, C146, C152, C154, C156, C176, C181, C201, C254, C255, C312, C326		CKCYB102K50
	C268, C272-C274		CKCYB103K50
	C196		CKCYB391K50
	C102, C109, C119, C120, C138, C150, C157, C162, C251, C253, C260, C262, C301, C303, C305, C307-C309, C311, C319, C321-C323, C327, C527, C786, C787		CKCYF103Z50
	C270, C522, C540		CKCYF472Z50
	C113, C135, C302, C304, C520, C531		CKCYF473Z50
	C306, C361, C362		CKCYX104M25
	C507		CKCYX473M25
	C114, C115, C137, C153, C163, C257, C263, C524		CKPUYB102K50
	C754, C755		CKPUYB221K50
	C769, C770		CKPUYB561K50
	C519, C533		CKPUYF103Z25
	C112, C515, C523, C529, C534, C537, C552, C554, C555, C761		CKPUYF473Z16
	C756, C757		CKPUYX562M16
	C106, C107, C131, C136, C161, C164, C165, C169, C171, C172, C178-C180, C191, C259, C264, C267, C313, C316, C318, C365, C368, C508, C766, C777, C781-C785		CKPUYY103M16
	C363, C364, C366, C367, C369, C370, C372, C373		CQMA102J50
	C352, C353, C356, C357		CQMA103J50
	C256		CQMA333J50

Mark	No.	Description	Part No.
RESISTORS			
	VR102 (10kΩ)		ACP1043
	VR101 (2.2kΩ)		VRTS6YS222
	R563, R564		RA9S104J
	R110, R200		RD1/2PM102J
	R508, R510		RD1/2PM122J
	R115		RD1/2PM562J
	R568		RD1/2PMFL3R3J
	R571		RD1/2PMFL4R7J
	R509		RD1/2PMFL621J
	R751, R752		RD1/4PM102J
	R161		RD1/4PM331J
	R259, R268		RD1/4PMFL100J
	R103, R120, R121, R155		RD1/4PMFL101J
	R174		RD1/4PMFL330J
	R102		RD1/4PMFL331J
	R147		RD1/4PMFL471J
	R166		RN1/4PC2701F
	R131		RN1/4PC3300F
	R100, R101		RS3LMF6R8J
	Other resistors		RD1/8PM□□□J
OTHERS			
	X501	CERAMIC OSCILLATOR(4.19MHz)	ASS1022
	X251	CERAMIC RESONATOR(500kHz)	ASS1079
	X300	CRYSTAL RESONATOR (16.384MHz)	ASS1083
	CN752	2P PIN JACK	AKB1146
		MINI JACK	AKN-207
	CN508	6P JUMPER CONNECTOR	KPC6
		PIN PLUG WITH CORD	ADE-082
		SCREW	PBZ30P080FMC
		TV FRONT-END	AXF1053
		SCREW	PMZ30P060FMC

POWER SUPPLY-HIGH VOLTAGE ASSY

SEMICONDUCTORS

Mark	No.	Part No.
	IC3900, IC3901	NJM4558DXP
	IC653	NJM7812FAS
⚠	IC652	ON3171-Q
×NSP	Q3900, Q3901	
	Q3902, Q3903	2SA1145
	Q664, Q773-Q775	2SA933S
	Q659	2SB824
	Q663	2SB950A
	Q660, Q665-Q667, Q771, Q772	2SC1740S
	Q661, Q3906	2SC2705
⚠	Q3904	2SC3332
⚠	Q658Z	2SC3552
⚠	Q3905Z	2SD1276A
⚠	Q3907Z	2SD2300(D)
	D670, D671, D673	11DF1FD
⚠	D3904Z	11DF2FD
	D667, D672, D674-D676, D678, D773, D3902, D3903, D3907, D3909-D3913	1SS252
⚠	D3906Z, D3908Z	ES1F
	D679, D688, D694, D771, D772	HSS104-02
	D682, D684, D685, D691	FMP-G12S
	D677	HZS6C2L
	D3914	RD15ESB2
	D690	RD39ESB4
×NSP	D3900, D3901	
	D686	RD5.1ESB2
	D668, D669	RD9.1ESB2
	D681	RG4A(A)
	D680, D683	RL4Z(A)
×NSP	D3905	

COILS AND TRANSFORMERS

Mark	No.	Part No.
⚠	L654	ATF-163
⚠	L651, L652	ATF1089
	L3901	ATH1001
	L656-L665, L667-L670	ATX1023
⚠	L3900	LTA472J
⚠	T3900	ATK1045
⚠	T3901Z	ATK1078
⚠	T652Z	ATK1080

CAPACITORS

Mark	No.	Part No.
⚠	C720, C721 (0.01μ, AC250V)	ACE-501
⚠	C701-C703 (0.1μ, 250V)	ACE-507
⚠	C737 (100P, 2kV)	ACG-032
⚠	C3918Z (1000P, 2kV)	ACG-033
⚠	C717, C718 (4700P, AC400V)	ACG-505
	C762 (2200P, 2kV)	ACG1046
⚠	C712, C723, C733, C763 (2200P, 2kV)	ACG1046
⚠	C3904 (33μ, 160V)	ACH-370
	C3914 (10μ, 160V)	ACH1117
⚠	C728 (47μ)	ACH1132
⚠	C741 (560μ, 160V)	ACH1146
⚠	C725 (4.7μ, 400V)	ACH1215
	C3907, C3909, C3917	CCCSL101K500
	C705, C727, C729, C736, C738, C739, C746, C747	CCCSL221K500
	C732, C761, C767	CEAS010M50
	C773	CEAS100M50
	C771	CEAS100M10
	C759	CEAS220M16
	C750	CEAS330M35
	C772	CEAS470M10
	C3908	CEHAQ010M2C
	C766, C3913	CEHAQ010M50
	C3915, C3921	CEHAQ100M50
	C758	CEHAQ101M50
	C3916	CEHAQ2I0M2C
	C3906	CEHAQ2I0M63
	C3900, C3903	CEHAQ2I1M25
	C704	CEHAQ2I2M35
	C740	CEHAQ2I2M50
	C742, C743, C751, C752	CEHAQ3I2M35
	C3911	CEHAQ3I3M50
	C3901	CEHAQ4I0M25
⚠	C3919Y	CFPHW1J3H3D
	C724	CFTXA2I4J50

Mark	No.	Description	Part No.
	C726, C760		CFTXA474J50
	C3905		CKCYB103K50
	C3912		CKCYB222K50
	C3902, C3922		CKCYF103Z50
	C3924, C3925		CKCYF473Z50
	C3910		CKDYB472K500
	C730		CKDYF103Z50
	C744, C749		CKDYF103Z500
	C3920, C3923		CQMA102J50
	C731		CQMA822J50

RESISTORS

Mark	No.	Description	Part No.
	VR651 (1kΩ)		VRTS6VS102
⚠×NSP	VR3900		
×NSP	VR3901		
	R3948 (47Ω, 1/2W)		ACN-225
⚠	R282, R287 (4.7Ω, 5W)		ACN1051
⚠	R288, R306 (3.9Ω, 5W)		ACN1062
	R293		RD1/2PM101J
	R3936		RD1/2PM162J
	R289, R291		RD1/2PM241J
	R3939		RD1/2PM471J
⚠	R285		RD1/2PMFL103J
⚠	R279		RD1/2PMFL222J
⚠	R3926		RD1/2PMFL472J
	R313		RD1/4PM122J
	R778		RD1/4PM222J
	R3932		RD1/4PM272J
×NSP	R3900		
⚠	R3931		RD1/4PMFL111J
⚠×NSP	R3938		
⚠	R3906, R3909		RD1/4PMFL3R9J
⚠	R3910		RD1/4PMFL470J
⚠	R3928		RD1/4PMFL471J
⚠	R3945Z, R3946Z		RN1/2PC4302F
×NSP	R3944		
×NSP	R3942		
⚠×NSP	R3934		
⚠×NSP	R3911		
	R321		RN1/4PC1501F
×NSP	R3943		
	R296, R298		RN1/4PC1603F
	R320		RN1/4PC1800F
	R294		RN1/4PC3601F
	R319		RN1/4PC5101F
⚠×NSP	R3930		
⚠×NSP	R3912		
	R309		RS1LMF272J
	R3921		RS1LMF472J
	R3937		RS2LMF101J
	R338		RS2LMF151J
	R303		RS2LMF223J
	R339		RS2LMF470J
	R362		RS2LMFR47J
	R323		RS3LMF183J
	R280, R281, R284		RS3LMF1R5J
	R286, R295, R307		RS3LMF3R9J
⚠	R3935Z		RS3LMFR47J
	R3918		RS3LMFR68J
	R351-R353		RT1OPD270K
	R304, R305		RT1OPD330K
	R308		RT7PD1R5K
×NSP	R3902, R3903, R3908		
×NSP	R3904		
×NSP	R3905		
×NSP	R3907		
×NSP	R3922		
×NSP	R3927		
	Other resistors		RD1/8PM□□□J

OTHERS

No.	Description	Part No.
	SCREW	ABA-234
	SCREW	BBZ30P080FCU
	SCREW	PBZ30P080FMC
	SCREW	VPZ40P100FMC
	MICA SHEET	AEC1380

AC INPUT ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
⚠	IC501		ON3171-Q
	Q400		2SA933S
	Q401		2SC1740S
	Q402, Q403		2SD1275
	Q404		2SD438
	D300, D301, D303		1SS252
	D304, D305, D310, D314		1SS145
	D302		HZS6B1L
	D313		RBV-604(A)
	D311, D312, D315-D318		RD6.2ESB2
	D306-D309		S5566

RELAYS

Mark	No.	Description	Part No.
⚠	RY503		ASR1027
⚠	RY501, RY502		ASR1036

COILS AND TRANSFORMER

Mark	No.	Description	Part No.
⚠	L500		ATF1089
	L501		ATH1009
⚠	T501		ATT1234

CAPACITORS

Mark	No.	Description	Part No.
⚠	C200 (0.1μ, 250V)		ACE-507
⚠	C206-C209 (0.01μ, AC400V)		ACG1003
	C204		CEAS100M50
	C203		CEAS101M16
	C210		CEAS101M25
	C201		CEHAQ102M25
	C205		CEHAQ102M50
	C202		CKCYF103Z50

RESISTORS

Mark	No.	Description	Part No.
	R101 (2.2MΩ, 1/2W)		ACN-208
⚠	R116, R119 (5.6Ω, 5W)		ACN1060
	R108, R111		RD1/2PM270J
	R118		RD1/4PM470J
	Other resistors		RD1/8PM□□□J

Mark	No.	Description	Part No.
OTHERS			
		SCREW	ABA-234

FRONT CONTROL ASSY

SEMICONDUCTORS			
	IC851		PD5136
	PC851		U5C-08SC
	Q853		2SA933S
	Q851, Q855, Q856		2SC1740S
	Q857, Q858		2SC2458
	D852, D853, D857-D859		1SS252
	D856		AEL1152
	D851		RD3.0ESB
SWITCHES			
	S851-S853, S856-S866		ASG1034
CAPACITORS			
	C852, C853		CCCCH221J50
	C873, C874, C876, C877		CEAS010M50
	C875		CEAS100M50
	C854		CEAS2R2M50
	C868		CEJA100M35
	C872		CEJA220M16
	C867		CEJA330M25
	C851		CFTXA104J50
	C855		CGMYX103M16
	C871		CKCYF103Z50
	C866		CKMYF472Z50
RESISTORS			
	VR851 (47kΩ)		ACP1045
	R876		RD1/2PM511J
	R870		RD1/2PMFL820J
	Other resistors		RD1/8PM□□□J
OTHERS			
	X851	CERAMIC OSCILLATOR(480kHz)	ASS1043
	CN856	1P PIN JACK	AKB1055
	CN858	1P PIN JACK	AKB1056
	CN857	1P PIN JACK	AKB1057
	CN855	4P MINI DIN SOCKET	AKP1081

RECEIVER ASSY

CAPACITORS			
	C870		CCMSL121J50
	C869		CEAS010M50
RESISTORS			
	All resistors		RD1/8PM□□□J
OTHERS			
		REMOTE RECEIVER UNIT	AXX1033

Mark	No.	Description	Part No.
R CRT DRIVE ASSY			
SEMICONDUCTORS			
⚠	Q3511		2SC2611
	D3511		HSS104-02
COILS			
	L3511		LAU101K
	L3512, L3513		LAU470K
CAPACITORS			
⚠	C3513 (1000P, 2kV)		ACG1001
	C3511 (4.7μ, 250V)		ACH-378
	C3512		CEAS470M25
	C3514		CKCYB681K50
RESISTORS			
⚠	R3511 (47Ω, 1/2W)		ACN-225
⚠	R3514 (1kΩ, 1/2W)		ACN1006
	R3516		RD1/2PM100J
	R3512, R3513		RS3LMF332J
	Other resistors		RD1/8PM□□□J
OTHERS			
		CRT SOCKET	AKG1004
		SCREW	PMB30P100FMC

G CRT DRIVE ASSY

SEMICONDUCTORS			
⚠	Q3521		2SC2611
	D3521		HSS104-02
COILS			
	L3521		LAU101K
	L3522, L3523		LAU470K
CAPACITORS			
⚠	C3523 (1000P, 2kV)		ACG1001
	C3521 (4.7μ, 250V)		ACH-378
	C3522		CEAS470M25
	C3524		CKCYB681K50
RESISTORS			
⚠	R3521 (47Ω, 1/2W)		ACN-225
⚠	R3524 (1kΩ, 1/2W)		ACN1006
	R3526		RD1/2M100J
	R3522, R3523		RS3LMF332J
	Other resistors		RD1/8M□□□J
OTHERS			
		CRT SOCKET	AKG1004
		SCREW	PMB30P100FMC

B CRT DRIVE ASSY

SEMICONDUCTORS			
⚠	Q3531		2SC2611
	D3531		HSS104-02

Mark	No.	Description	Part No.
COILS			
	L3531		LAU101K
	L3532, L3533		LAU470K
CAPACITORS			
⚠	C3533 (1000P, 2kV)		ACG1001
	C3531 (4.7μ, 250V)		ACH-378
	C3532		CEAS470M25
	C3534		CKCYB681K50
RESISTORS			
⚠	R3531 (47Ω, 1/2W)		ACN-225
⚠	R3534 (1kΩ, 1/2W)		ACN1006
	R3536		RD1/2PM100J
	R3532, R3533		RS3LMF332J
	Other resistors		RD1/8PM□□□J
OTHERS			
		CRT SOCKET	AKG1004
		SCREW	PMB30P100FMC

ELECTROLYTIC CAPACITOR ASSY

Mark	No.	Description	Part No.
CAPACITORS			
	C701		ACH1170
	C702 (560μ, 400V)		ACH1214
RESISTORS			
	R701, R702		RS2LMF563J

CONVERGENCE-AUDIO AMP ASSY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	IC2900		LA4280-P
	IC5405-IC5408		M5220L
	IC5400		NJM7805FAS
	IC5401		NJM7905FA
	IC5402, IC5403		PA0053A
	IC5409, IC5410		STK392-020
	Q5405		2SA1038
	Q5400, Q5402		2SA1048
	Q2006		2SA1237
	Q2003		2SB950A
	Q5406		2SB951A
	Q2002		2SC1845
	Q2000, Q2001, Q2005, Q2902, Q2903, Q5401, Q5403, Q5404		2SC2458
	Q2900, Q2901		2SC3327
	Q2004		2SD1276A
	Q5410		DTC124ES
	Q5409		XDC143ES
	D5430		11DF1
	D2000-D2007, D2902-D2916, D2919, D5400, D5402, D5404, D5422, D5423, D5451, D5452, D5454, D5455, D5459-D5462		HSS104-02
	D5405, D5407, D5410, D5411, D5413, D5414, D5416-D5421, D5424-D5429, D5433-D5450		RD12ESB
	D2917, D2918, D5456-D5458		RD39ESB
	D5453		RD5.6ESB2
	D2900, D2901		RD6.8ESB2
COILS			
	L5400-L5402		ATH-059
	L2900, L2901		ATH-133
	L5403-L5405		ATX1023
CAPACITORS			
	C5414, C5416, C5442, C5445, C5446, C5449, C5450, C5453		CCCSL100D50
	C5405, C5409		CCCSL221J50
	C2007		CEANP2R2M50
	C5420, C5425, C5427, C5428, C5439, C5465		CEAS010M50
	C2902, C2903, C2924		CEAS100M50
	C5400, C5423, C5424, C5464		CEAS101M10
	C5469		CEAS101M25
	C2923		CEAS102M6
	C2006		CEAS221M10
	C2916, C2917		CEAS221M50
	C2912, C2913		CEAS222M35
	C2906, C2907		CEAS330M35
	C5436, C5437		CEAS470M16
	C2922, C5440		CEAS470M50
	C2920		CEAS471M50
	C5438		CEAS4R7M50
	C5418, C5419, C5426		CEASR47M50
	C5460-C5463		CEHAQ100M50
	C5401, C5402		CEHAQ471M25
	C2000, C2001, C5403		CEHAQ471M35
	C2910, C2911		CFTXA124J50
	C2002, C5470-C5472		CKCYB102K50
	C2003		CKCYB222K50
	C2005, C2008, C2009, C5454-C5459		CKCYB331K50
	C2925		CKCYF102Z50
	C5406-C5408, C5413, C5430, C5431, C5443, C5444, C5447, C5448, C5451, C5452, C5466		CKCYF103Z50
	C2918, C2919, C2921		CKCYF473Z50
	C5429, C5433		CKCYX103M16
	C2930, C2931		CKDYF473Z50
	C2908, C2909		CKMYB151K50
	C5411, C5467		CQMA102J50
	C5435		CQMA104J50
	C2914, C2915, C5421		CQMA152J50
	C5432, C5434		CQMA224J50
	C5422		CQMA471J50
RESISTORS			
	R2918, R2919		RD1/2PM152J
	R5466		RD1/2PM332J
	R5622-R5624		RD1/2PMFL101J
	R2009		RD1/2PMFL103J
	R5619-R5621		RD1/2PMFL201J

Mark	No.	Description	Part No.
	R2914, R2915		RD1/4PMFL100J
	R2912, R2913		RD1/4PMFL2R2J
	R2019		RN1/4PC3900F
	R2000, R2001		RS1LMF010J
	R5403, R5407, R5408		RS1LMFR33J
	R2011, R2012, R2017		RS2LMF010J
	R5599, R5600, R5605, R5606, R5611, R5612		RS2LMF1R8J
	R5431		RT5PD180K
	R5430		RT5PD270K
	Other resistors		RD1/8PM□□□J

OTHERS

	MICA SHEET	AEC1140
	SCREW	BBZ30P080FCU
	SCREW	VBZ30P080FMC
	SCREW	VBZ30P120FMC
	SCREW	VBZ30P120FMC
	SCREW	VBZ30P160FMC

CONVERGENCE GH ASSY

SEMICONDUCTORS

	IC4200	PM0002A
	Q4200	2SC2712
	D4200	RD12ESB

CAPACITORS

	C4200, C4201	CKSQYB103K50

RESISTORS

	R4215, R4219, R4220	RS1/10S102J
	R4201, R4202, R4218	RS1/10S103J
	R4216, R4217, R4222-R4224	RS1/10S154J
	R4211	RS1/10S242J
	R4213	RS1/10S331J
	R4203, R4204, R4208, R4209	RS1/10S471J
	R4206, R4210, R4221	RS1/8S000J
	R4207	RS1/8S102J
	R4214	RS1/8S223J
	R4212	RS1/8S273J
	Other resistors	RD1/8PM□□□J

CONVERGENCE H1 ASSY

SEMICONDUCTORS

	IC4230	PM0002A
	Q4230	2SC2712
	D4230	RD12ESB

CAPACITORS

	C4230, C4231	CKSQYB103K50

RESISTORS

	R4236, R4239, R4244, R4245	RS1/10S102J
	R4243, R4246	RS1/10S103J
	R4240-R4242, R4247-R4249	RS1/10S154J
	R4237	RS1/10S242J
	R4238	RS1/10S331J
	R4231, R4232, R4234, R4235	RS1/10S471J
	Other resistors	RD1/8PM□□□J

CONVERGENCE H2 ASSY

SEMICONDUCTORS

	IC4260	PM0002A
	Q4260	2SC2712
	D4260	RD12ESB

CAPACITORS

	C4260, C4261	CKSQYB103K50

RESISTORS

	R4266, R4269, R4274, R4275	RS1/10S102J
	R4273, R4276	RS1/10S103J
	R4270-R4272, R4277-R4279	RS1/10S154J
	R4267	RS1/10S242J
	R4268	RS1/10S331J
	R4261, R4262, R4264, R4265	RS1/10S471J
	Other resistors	RD1/8PM□□□J

CONVERGENCE V1 ASSY

SEMICONDUCTORS

	IC4290	PM0002A
	Q4290	2SC2712
	D4290	RD12ESB

CAPACITORS

	C4290, C4291	CKSQYB103K50

RESISTORS

	R4296, R4299, R4304, R4305	RS1/10S102J
	R4303, R4306	RS1/10S103J
	R4300-R4302, R4307-R4309	RS1/10S104J
	R4297	RS1/10S242J
	R4298	RS1/10S331J
	R4291, R4292, R4294, R4295	RS1/10S471J
	Other resistors	RD1/8PM□□□J

CONVERGENCE V2 ASSY

SEMICONDUCTORS

	IC4320	PM0002A
	Q4320	2SC2712
	D4320	RD12ESB

CAPACITORS

	C4320, C4321	CKSQYB103K50

RESISTORS

	R4326, R4329, R4334, R4335	RS1/10S102J
	R4333, R4336	RS1/10S103J
	R4330-R4332, R4337-R4339	RS1/10S104J
	R4327	RS1/10S242J
	R4328	RS1/10S331J

Mark	No.	Description	Part No.
	R4321, R4322, R4324, R4325		RS1/10S471J
	Other resistors		RD1/8PM□□□J

CONVERGENCE V3 ASSY

SEMICONDUCTORS

	IC4350	PM0002A
	Q4350	2SC2712
	D4350	RD12ESB

CAPACITORS

	C4350, C4351	CKSQYB103K50

RESISTORS

	R4356, R4359, R4364, R4365	RS1/10S102J
	R4363, R4366	RS1/10S103J
	R4360-R4362, R4367-R4369	RS1/10S104J
	R4357	RS1/10S242J
	R4358	RS1/10S331J
	R4351, R4352, R4354, R4355	RS1/10S471J
	Other resistors	RD1/8PM□□□J

VIDEO·DEFLECTION ASSY

SEMICONDUCTORS

	IC201	CX20125
	IC205	MC7812CT
	IC3700	NJM4558DXP
	IC203	PA0030
	IC204	TA8759BN
	IC202	TDA4566
	Q3706, Q3709	2SA1048
	Q3700, Q3701	2SA1145
	Q203-Q205, Q214, Q215, Q219, Q232, Q234-Q237, Q239, Q245-Q247, Q251, Q259, Q262, Q270, Q271	2SA933S
	Q201, Q202, Q206, Q207, Q209-Q212, Q217, Q218, Q220-Q224, Q228, Q229, Q231, Q238, Q240, Q242, Q244, Q248-Q250, Q252-Q257, Q260, Q261, Q263-Q269, Q273	2SC1740S
	Q3707, Q3711	2SC2458
	Q3702	2SC2705
⚠	Q3703	2SC3332
⚠	Q3708Z	2SC4633(A)
⚠	Q3704Z	2SD1276A
⚠	Q3705Z	2SD2300(D)
	Q216, Q274	RN1201
	Q225, Q233, Q272	RN1203
⚠	D3704Z	11E2
	D246, D247, D250	11E2
	D209	S5566
	D203, D205, D208, D211, D213-D215, D217-D221, D224, D226-D228, D230-D232, D234-D243, D245, D248, D249, D251, D254, D255, D257-D266, D3701-D3703, D3707, D3711-D3717, D3720-D3728	HSS104-02

Mark	No.	Description	Part No.
	D3710		RD15ESB
	D204		RD3. 0ESB2
	D252, D253		RD4. 3ESB3
	D207, D3700, D3708, D3709		RD5. 1ESB2
	D216		RD5. 1ESB3
	D212		RD9. 1ESB
⚠	D3705Z, D3706Z		RP1H
	D206, D210, D3718		S5566

COILS AND TRANSFORMERS

	L221	ATF-163
	L211	ATG1009
⚠	L3705	ATH1002
⚠	L3703Z	ATL1093
	L201	LAU120K
	L204, L206	LAU270K
	L219	LAU330K
	L220	LAU3R3K
	L208	LAU680K
	L216-L218	LAU6R8K
	L207	LAU820K
	L214	LAU8R2K
⚠	L3704, L3706	LTA562J
⚠	T3701	ATK1045
⚠	T3700Z	ATK1050

CAPACITORS

⚠	C3721, C3724 (4700P, 2kV)	ACG-035
⚠	C3717Z (680P, 2kV)	ACG1024
⚠	C3710 (33μ, 160V)	ACH-370
⚠	C3716 (1μ, 160V)	ACH-372
	C265	CCCCH100D50
	C245, C248, C333-C335	CCCCH101J50
	C313	CCCCH120J50
	C327, C330, C351, C352	CCCCH121J50
	C331	CCCCH151J50
	C309	CCCCH220J50
	C226, C318	CCCCH330J50
	C208, C264, C314	CCCCH390J50
	C267, C344	CCCCH470J50
	C332	CCCCH560J50
	C223, C237, C244, C247	CCCCH680J50
	C202, C204, C236, C242, C243	CCCCH820J50
	C3706, C3711, C3713	CCCSL101K500
	C254	CCCSL181J50
	C341-C343	CCCSL221J50
	C315, C3738	CCCSL271J50
	C233	CCDSL221J50
	C213, C310	CEANP2R2M50
	C215	CEANP3R3M50
⚠	C3722	CEANP4R7M100
	C240	CEANP4R7M50
	C250, C251	CEANPR47M50
	C201, C209, C238, C241, C258, C269, C297, C300, C316, C3703, C3728	CEAS010M50
	C3705	CEAS100M100
	C203, C206, C252, C276, C3715, C3733	CEAS100M50

Mark	No.	Description	Part No.
	C210, C227, C257, C261, C266, C277, C336		CEAS101M16
	C3700, C3702, C3718, C3725		CEAS101M25
	C3729		CEAS101M35
	C256, C287, C299, C347, C350		CEAS220M50
	C282, C338		CEAS221M16
	C205, C217		CEAS2R2M50
	C294, C3732		CEAS331M16
	C212, C216, C229, C231, C246, C349		CEAS470M25
	C207, C268, C281		CEAS4R7M50
	C274		CEAS6R8M50
	C253		CEASR47M50
	C230		CEASR68M50
	C3712		CEHAQ010M2C
	C272		CEHAQ470M25
⚠	C3708		CEHAQ470M2C
⚠	C3720Y		CFPHW103H3D
⚠	C3719Y		CFPHW683H3A
⚠	C3723Y		CFPMW474J2D
	C285, C286, C290, C291, C293, C295		CFTXA104J50
	C319		CFTXA223J50
	C306		CFTXA224J50
	C278		CKCYB102K50
	C275, C288, C289, C292, C296, C301, C308, C312, C340, C3704		CKCYB103K50
	C328, C329		CKCYB391K50
	C3726		CKCYB391K500
	C305		CKCYB561K50
	C249		CKCYF103Z50
	C214, C220, C232, C234, C284, C3701, C3707		CKCYF473Z50
	C228, C259, C260, C271, C311, C337, C339		CKCYX104M25
	C211, C219		CKDYB103K50
	C3714		CKDYB103K500
	C235, C239		CKDYB471K50
	C3734		CQMA103J50
	C3727		CQMA183J50
	C3735		CQMA223J50
	C298		CQMA393J50
	C307		CQMA472J50
	C348		CQMA473J50
	C302, C317		CQMA563J50
	C3709		CQMA682J50

RESISTORS

	VR356 (470Ω)	ACP1039
	VR201, VR202 (470Ω)	VRTS6HS471
⚠	R3756 (33kΩ, 1/2W)	ACN1011
	R3760-R3762	RD1/2PM101J
	R3702	RD1/2PM102J
	R504	RD1/2PM122J
	R3741	RD1/2PM152J
	R3729	RD1/2PM182J
	R357, R467-R469, R3764	RD1/2PM221J
	R441-R443, R483	RD1/2PM471J
	R3728	RD1/2PM473J
	R3732	RD1/2PMFL103J
	R3700	RD1/2PMFL3R9J
	R315	RD1/2PMFL4R7J
	R3722	RD1/2PMFL682J

Mark	No.	Description	Part No.
	R3712		RD1/4PM104J
	R3754		RD1/4PM221J
	R3755		RD1/4PM241J
	R3733		RD1/4PMFL101J
	R3720, R3737		RD1/4PMFL470J
	R3727		RD1/4PMFL471J
	R3753		RN1/2PC750OF
	R3745		RN1/4PC1002F
	R464, R465		RN1/4PC1100F
	R466		RN1/4PC1200F
	R3750		RN1/4PC1201F
	R434-R436		RN1/4PC2200F
	R3748		RN1/4PC3301F
	R3744		RN1/4PC3602F
	R3725		RS1LMF153J
⚠	R3730		RS1LMF271J
⚠	R3746, R3747, R3751, R3752, R3767, R3768		RS1LMF473J
⚠	R3735, R3736, R3739, R3740, R3742, R3743		RS1LMF563J
⚠	R3731Z		RS2LMF1R5J
⚠	R3710		RS2LMF2R2J
	R325, R494		RS3LMF6R8J
	Other resistors		RD1/8PM□□□J

OTHERS

	X202	CRYSTAL RESONATOR (3.579545MHz)	ASS-028
	X201	CRYSTAL RESONATOR (4.433619Hz)	ASS-041
	X203	CERAMIC RESONATOR(503kHz)	ASS1019
	DL206	DELAY LINE	ATN1014
	DL212	GLASS DELAY LINE	ATN1036
⚠	CN3702Z-CN3704Z	6P PLUG	AKM1072
		SCREW	ABA-234
		SCREW	BBZ30P08OFCU
		SCREW	PBZ30P08OFMC

I/O-TEXT-Y/C ASSY

SEMICONDUCTORS

	IC603	CF70095
	IC602	CF72306
	IC752	MC14052BCP
	IC751	MC14053BCP
	IC251, IC252, IC600, IC601	MC14066BCP
	IC604	MC34064P
	IC451	NJM7809AS
	IC101	PA0040
	IC401	PD0012A
	Q105, Q111, Q755, Q759, Q761, Q763, Q901, Q902, Q907	2SA933S
	Q101-Q103, Q106-Q110, Q112, Q252, Q253, Q301, Q600-Q606, Q751-Q754, Q756-Q758, Q760, Q764-Q772, Q903, Q905, Q906, Q908, Q921	2SC1740S
	Q104, Q114, Q115, Q124, Q904	2SC3327

Mark	No.	Description	Part No.
	Q773		DTC143ES
	Q125, Q126		RN1201
	Q251		RN1203
	D101, D104-D126, D231, D301, D601, D602, D604-D615, D901-D907, D921		1SS252
	D603		ITT310
COILS			
	L505, L506		ATF-163
	L767		ATG1006
	L752		ATG1008
	L601		ATG1057
	L501-L504, L600, L603, L607-L610, L615, L616		ATX1008
	L105, L106, L109-L112, L1017		LAU010J
	L768		LAU100K
	L765		LAU150J
	L758		LAU150K
	L761		LAU1R8K
	L770		LAU220K
	L759, L762, L763		LAU3R9K
	L754, L755		LAU470K
	L101, L102, L113, L114, L301, L302		LAU560J
	L769		LAU560K
	L611-L614		LAU6R8K
	L756		LAU820K
	L760, L764		LAU8R2K
CAPACITORS			
	C606, C609, C629		CCCCH150J50
	C767, C770, C772		CCCCH151J50
	C762, C763		CCCCH181J50
	C607, C608, C769, C773		CCCCH221J50
	C625		CCCCH271J50
	C766, C783		CCCCH330J50
	C782		CCCCH390J50
	C616, C784		CCCCH470J50
	C624		CCCCH820J50
	C125		CEANP220M35
	C103, C104, C112, C113, C116, C117, C128, C129, C148, C149, C251, C252, C901		CEAS010M50
	C789		CEAS100M50
	C402, C613, C615, C621, C623, C637, C639, C768, C781, C902		CEAS101M10
	C126, C302		CEAS101M16
	C253, C254, C753, C921		CEAS101M25
	C120, C140, C147, C301		CEAS102M10
	C101, C111, C114		CEAS220M25
	C455		CEHAQ221M25
	C123		CEAS222M16
	C118, C119, C131, C132, C141, C142, C303, C304		CEAS2R2M50
	C635		CEAS331M10
	C403		CEAS470M10
	C452		CEAS470M16
	C127, C136, C144, C231, C454, C600, C602, C603, C617, C620, C626, C636, C751, C754, C756, C758, C759, C771, C778, C779, C785		CEAS470M25
	C764		CKCYB102K50
	C137, C401, C451, C453, C774, C775, C777		CKCYB103K50
	C121, C122, C255-C257, C305, C306, C704		CKCYB222K50
	C102, C110, C115, C124, C130, C133-C135, C143, C757, C776, C780, C786-C788		CKCYF103Z50
	C628		CKCYF222Z50
	C752, C755		CKCYF473Z50
	C611, C631-C634		CKCYX103M16
	C627		CKCYX104M16
	C601, C604, C612, C614, C618, C619, C622, C638, C640		CKCYX473M16
	C703		CKPUYX222M16
RESISTORS			
	VR751 (1kΩ)		ACP1040
	R164, R165		RD1/2PM121J
	R185, R202		RD1/2PM221J
	R302		RD1/2PM241J
	R790		RD1/2PM271J
	R160		RD1/2PMFL100J
	R781		RD1/4PM681J
	R784		RD1/4PM821J
	R451		RS3LMF100J
	Other resistors		RD1/8PM□□□J
OTHERS			
	X600	CRYSTAL OSCILLATOR (13.875MHz)	ASS1081
	DL766	GLASS DELAY LINE	ATN1011
	CN130	12P PIN JACK	AKB1212
		4P SPEAKER TERMINAL	AKE1007
	CN115	21P SOCKET	AKP1003
	CN117, CN118	4P MINI DIN SOCKET	AKP1017
	CN501, CN601	4P JUMPER CONNECTOR	KPC4
	CN105	6P JUMPER CONNECTOR	KPC6
	CN103	8P JUMPER CONNECTOR	KPC8
		SCREW	ABA-234

AV-2 ASSY

Mark	No.	Description	Part No.
COILS			
	L107, L108		LAU010J
	L115, L116		LAU560J
CAPACITORS			
	C108, C109		CEAS010M50
	C106		CEAS220M25
	C138, C701, C702		CKCYB222K50
	C107		CKCYF103Z50
RESISTORS			
	All resistors		RD1/8PM□□□J
OTHERS			
	CN116	21P SOCKET	AKP1003
	CN106	6P JUMPER CONNECTOR	KPC6
	CN107	8P JUMPER CONNECTOR	KPC8

7. HOW TO CHECK POWER DOWN

● Checking method : Observe the voltage at each TP using an oscilloscope or a tester when the power is down. Check the TP where a voltage of 1 to 2 V is measured just before the power is down, and refer to the table below to confirm the defective block. Then turn the unit on again by inserting the plug of the AC power cord to the receptacle.

Assy Name	TP No.	TP Name	Defect circuit block	Example of the defect
VIDEO-DEFLECTION Assy	TP3700	H.Def.P.D	H.deflection block	• H. OUT transistor (Q3705) is shorted.
	TP3704	P.D	H.deflection block	• Defects in the blanking circuit. • H. OSC (IC204) is stopped. • H. OUT transistor (Q3705) is opened.
POWER SUPPLY-HIGH VOLTAGE Assy	TP3905	HV.P.D	High voltage block	• High voltage output transistor (Q3907) is shorted. • FBT (T3901) is rare shorted. • The load of FBT (T3901) is shorted. • CRT drive transistors (Q3511,Q3521 and Q3531) are shorted.
	TP3902	X-ray. P.D	High voltage block	• High voltage control transistor (Q3905) is shorted.
	TP655	P.D	Power supply block	• Defects in the high voltage regulator circuit (IC3900 and IC3901). • Defects in the 12V regulator IC (IC653).
	TP651	P.D	Power supply block	• Defects in the heater regulator circuit (Periphery of Q663).
	TP656	P.D	Video and H.deflection blocks (VIDEO-DEFLECTION Assy) Tuner,UCOM,NICAM and pre audio blocks (TUNER-UCOM Assy) Y/C SEP block (I/O-TEXT-Y/C Assy)	• The load of +12V line is shorted.
			Tuner block (TUNER-UCOM Assy) I/O block (I/O-TEXT-Y/C Assy)	• The load of +9V line is shorted.
I/O-TEXT-Y/C Assy	D921 anode	–	Tuner and UCOM blocks (TUNER-UCOM Assy) TEXT block (I/O-TEXT-Y/C Assy)	• The load of +5V line is shorted.
CONVERGENCE-AUDIO AMP Assy	TP5413	PD1	Convergence block	• Defects in the wavefom generator IC (IC5402 and IC5403). • Defects in the convergence amp IC (IC5409 and IC5410). • +15V and -17V lines are shorted.
	TP5412	PD2	Convergence block	• Defects in the wavefom generator IC (IC5402 and IC5403). • Defects in the convergence amp IC (IC5409 and IC5410). • +27V line is shorted.
	TP2000	PDV	V.deflection/V.amp block	• Defects in the wavefom generator IC (IC5402 and IC5403). • Defects in the V.OUT amp IC (Q2003 and Q2004). • +27V line is shorted or it is opened. • -17V line is shorted or it is opened.
	TP2900	PD	Audio amp block	• Output coupling capacitors (C2912 and C2913) are shorted.

8. ADJUSTMENTS

- In this section, all items required to be adjusted on this unit are described in the order of the adjustments to be performed. (See section 8.2.)
  For the adjustment items of each Assy, refer to pages 119 and 120.
- When replacing the assemblies, be sure to use an Assy which works completely.
- Characters in parentheses ( ) beside an adjustment point are an abbreviation of the Assy containing that adjustment point.
  C : CONVERGENCE-AUDIO AMP Assy
  P : POWER SUPPLY-HIGH VOLTAGE Assy
  F : FRONT CONTROL Assy
  T : TUNER-UCOM Assy
  V : VIDEO-DEFLECTION Assy
  VR1: Focus variable resistor (VR1)
  I : I/O-TEXT-Y/C Assy
- The adjustment points and test points are shown in Fig. 8-5 through Fig. 8-8 for each Assy.
- A test signal should be input to the AV-3 terminal on the front panel unless otherwise noted.
- Set the picture quality to standard unless otherwise noted.

• FACTORY ADJ mode

1. Entering FACTORY ADJ mode

Open the door on the front panel, turn the power on, and push the switch S858 in a small hole at the center of the front panel with a thin rod. The unit will then enter FACTORY ADJ mode.
To release FACTORY ADJ mode, push the switch S858 again, and a normal picture will be obtained.

2. Operating FACTORY ADJ mode

When the unit enters FACTORY ADJ mode, ADJUSTMENT RANGE mode is first obtained. Every time the Teletext keys on the remote control unit is pressed, the operation mode is switched from as follows.

Remote Control Unit key	Operation Mode
	ADJUSTMENT RANGE
	ADJUST CONVERGENCE STD
	ADJUST CONVERGENCE AUTO (*1)
	ADJUSTMENT S-BRITE
	ADJUST CONVERGENCE OFSET
	ADJUSTMENT OFFSET

*1 : This mode is only to be used at the factory.

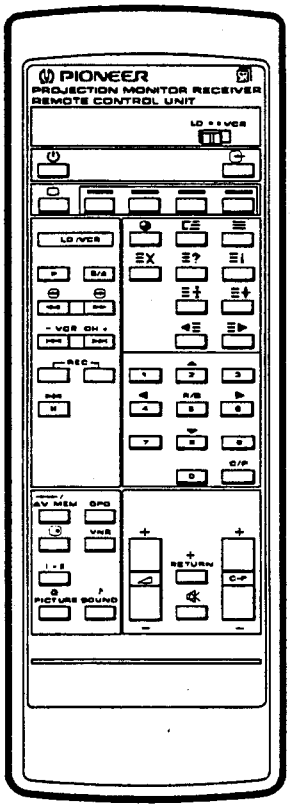
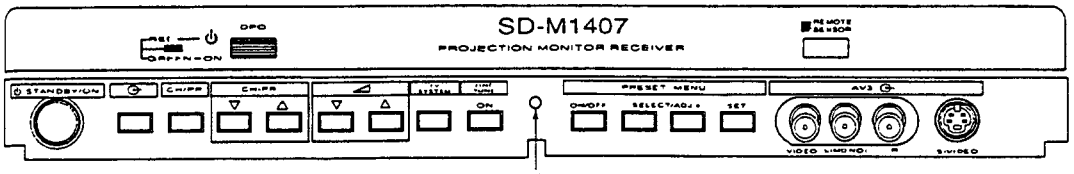


Fig. 8-2 Key indication on the remote control unit



Push S858 with thin rod.

Fig. 8-1 Entering FACTORY ADJ mode

① ADJUSTMENT RANGE mode

The ADJUSTMENT RANGE mode is to check how much the picture and sound quality change.

- **Function of the ADJUSTMENT RANGE mode**

You can switch adjustment items in the ADJUSTMENT RANGE screen by pressing the [PICTURE] key or numeric keys [1] through [5] or [7] through [9] on the remote control unit. Press the [PICTURE] key to switch items in the cycle as shown in Fig. 8-3. Also, the numeric keys which have each been assigned a function can be used to switch items. If you continuously press the same numeric key as that pressed in the previous step, the setting value will repeatedly change from CNT (center) → MIN (minimum) → MAX (maximum). In the case of "BALANCE", the meaning of CNT, MIN and MAX is.

• BALANCE

CNT : Center (Both channel output)
↓
MIN : Right channel output
↓
MAX : Left channel output

② ADJUSTMENT OFFSET mode (Pioneer's standard setting mode)

ADJUSTMENT OFFSET mode is to set the standard picture quality (Pioneer's standard) for a normal picture.

- **Function of the ADJUSTMENT OFFSET mode**

You can switch adjustment items in the ADJUSTMENT OFFSET screen by pressing the [PICTURE] key or a numeric key from [1] through [5]. Press the [PICTURE] key to switch items in the cycle from COLOR to SHARP (COLOR, TINT, CONTR, BRITE, SHARP) as shown in Fig. 8-3. Also, the numeric keys which have each been assigned a function can be used to switch items. Set the desired setting value by pressing the ◿ (VOLUME) [+], or [-] key.

The picture quality set in this mode is standard picture quality (PIONEER's standard) obtained by pressing the [→•←/AV MEM] key in a normal picture.

③ ADJUSTMENT S-BRITE mode

ADJUSTMENT S-BRITE mode is to set the standard OFFSET data in the soft brightness position.

When the non-volatile memory (IC503:X24C08P) in the TUNER-UCOM Assy is replaced, reset the memory in this mode.

You can switch adjustment items by pressing the [PICTURE] key or a numeric key from [1] through [5]. Press the [PICTURE] key to switch items in the cycle from COLOR to SHARP. Also, the numeric keys which have each been assigned a function can be used to switch items. Set the desired setting value by pressing the ◿ (VOLUME) [+], or [-] key.

④ ADJUST CONVERGENCE STD mode

ADJUST CONVERGENCE STD mode is to set the digital convergence. For details, see section "8.4. CONVERGENCE ADJUSTMENTS."

⑤ ADJUST CONVERGENCE OFSET mode

ADJUST CONVERGENCE OFSET mode is to offset the convergence adjustment data for NTSC (vertical 60 Hz) signals. (Adjustment data is effective when NTSC signals are input.)

After performing convergence adjustment using PAL (vertical 50 Hz) signals in ADJUST CONVERGENCE STD (FINE) mode, switch the signals to NTSC and adjust the convergence offset.

Set the desired adjustment items in the cycle [RH → BH] by pressing the C-P [+], or [-] key and set the desired setting value by pressing the ◿ (VOLUME) [+], or [-] key.

⑥ ADJUST CONVERGENCE AUTO mode

ADJUST CONVERGENCE AUTO mode is only to be used during automatic adjustment at the factory. It is not used for servicing.

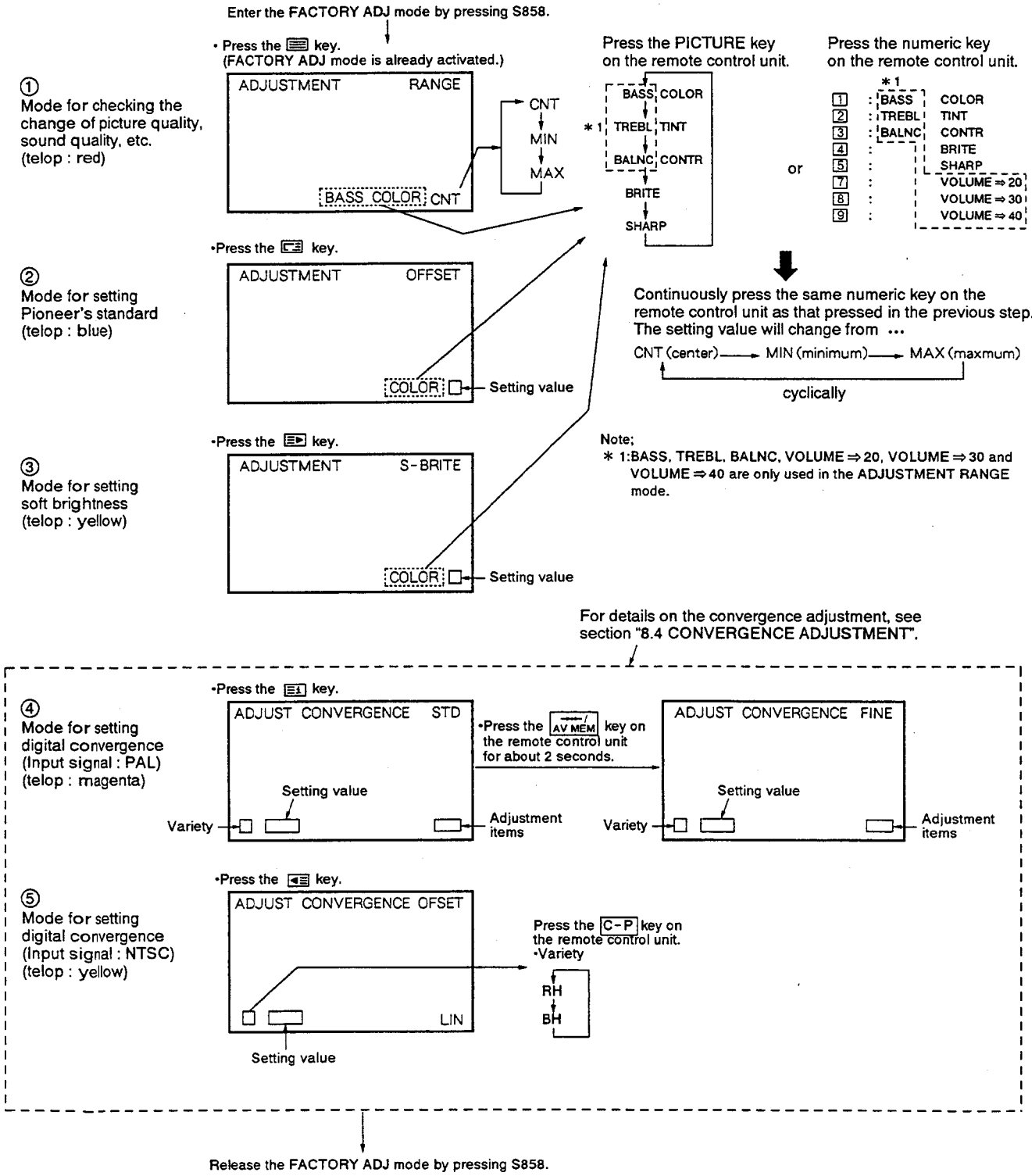

Enter the FACTORY ADJ mode by pressing S858.
• Press the key.
(FACTORY ADJ mode is already activated.)
① Mode for checking the change of picture quality, sound quality, etc. (telop : red)
ADJUSTMENT RANGE
BASS COLOR CNT
CNT
MIN
MAX
Press the PICTURE key on the remote control unit.
BASS COLOR
TREBL TINT
BALNC CONTR
BRITE
SHARP
Press the numeric key on the remote control unit.
or
1 BASS COLOR
2 TREBL TINT
3 BALNC CONTR
4 BRITE
5 SHARP
7 VOLUME ⇒ 20
8 VOLUME ⇒ 30
9 VOLUME ⇒ 40
•Press the key.
② Mode for setting Pioneer's standard (telop : blue)
ADJUSTMENT OFFSET
COLOR
Setting value
Continuously press the same numeric key on the remote control unit as that pressed in the previous step. The setting value will change from ...
CNT (center) → MIN (minimum) → MAX (maxmum)
cyclically
•Press the key.
③ Mode for setting soft brightness (telop : yellow)
ADJUSTMENT S-BRITE
COLOR
Setting value
Note;
* 1:BASS, TREBL, BALNC, VOLUME ⇒ 20, VOLUME ⇒ 30 and VOLUME ⇒ 40 are only used in the ADJUSTMENT RANGE mode.
For details on the convergence adjustment, see section "8.4 CONVERGENCE ADJUSTMENT".
•Press the key.
④ Mode for setting digital convergence (Input signal : PAL) (telop : magenta)
ADJUST CONVERGENCE STD
Setting value
Variety
Adjustment items
•Press the AV MEM key on the remote control unit for about 2 seconds.
ADJUST CONVERGENCE FINE
Setting value
Variety
Adjustment items
•Press the key.
⑤ Mode for setting digital convergence (Input signal : NTSC) (telop : yellow)
ADJUST CONVERGENCE OFSET
LIN
Setting value
Press the C-P key on the remote control unit.
•Variety
RH
BH
Release the FACTORY ADJ mode by pressing S858.

Fig. 8-3 Screen display on the FACTORY ADJ mode

8.1 ADJUSTMENTS REQUIRED WHEN AN ASSEMBLY IS REPAIRED OR REPLACED

Note: For the method of adjustment, see section "8.2 Adjustment method." A number in parentheses indicates the step number in section "8.2 Adjustment method."

8.1.1 When POWER SUPPLY-HIGH VOLTAGE Assy was Repaired

1. (step 1) 135V power supply adjustment
2. (step 8) Focus VR adjustment
3. (step 10) White balance adjustment

Note: VR3900 and VR3901 are protected by the shield covers (ANH1166) so that they can not be adjusted. Do not try to turn these volumes by removing their shield cover. (Otherwise, the sensitivity of the protection circuit against the X-ray and the anode voltage will be affected.)

8.1.2 When POWER SUPPLY-HIGH VOLTAGE Assy was Replaced

- Adjustments of (step 8) and (step 10)

Note: VR3900 and VR3901 are protected by the shield covers (ANH1166) so that they can not be adjusted. Do not try to turn these volumes by removing their shield cover. (Otherwise, the sensitivity of the protection circuit against the X-ray and the anode voltage will be affected.)

8.1.3 When VIDEO-DEFLECTION Assy was Repaired

1. (step 14) PAL system adjustment
2. (step 4) Brightness adjustment
3. (step 10) White balance adjustment
4. (steps 15 through 18) Pioneer's standard settings

Note: Check the focus, If the focus is not correct, perform the focus VR adjustment (step 8).

8.1.4 When VIDEO-DEFLECTION Assy was Replaced

- Adjustments of (step 4), (step 10) and (step 15 through 18).

Note: Check the focus, If the focus is not correct, perform the focus VR adjustment (step 8).

8.1.5 When TUNER-UCOM Assy was Repaired or Replaced

1. (step 3) Contrast corse adjustment
2. (step 4) Brightness adjustment
3. (step 11) Testcross H-center position adjustment
4. (step 12) Tuner section adjustment
5. (step 15 through 18) Pioneer's standard settings
6. (step 19) Soft brightness setting
7. (step 20) DPO BASE setting

Note 1 : When replacing the TUNER-UCOM Assy due to reasons other than a defective memory, remove the non-volatile memory IC503 (X24C08P) from the old Assy and install it in the new Assy. The convergence data adjusted at the factory is stored in this memory.

Note 2 : Reset the user settings such as the convergence POSITION adjustment, channel presetting of the tuner, etc.

8.1.6 When CONVERGENCE-AUDIO AMP Assy was Repaired or Replaced

- (step 9) Convergence adjustment

8.1.7 When R., G. or B. CRT DRIVE Assy was Repaired or Replaced

- Check the white balance. If the white balance is not correct, perform white balance adjustment (step 10).

8.1.8 When FRONT CONTROL Assy was Repaired

- (step 21) DPO sensitivity adjustment

8.1.9 When FRONT CONTROL Assy was Replaced

- No adjustment is required.

8.1.10 When I/O-TEXT-Y/C Assy was Repaired

1. (step 2) Comb filter adjustment
2. (step 13) VCO free run adjustment in the TEXT section

8.1.11 When I/O-TEXT-Y/C Assy was Replaced

- No adjustment is required.

8.1.12 When VIDEO-DEFLECTION Assy was Repaired or Replaced

Note : This unit uses high DC voltage in the dynamic focus circuit block of this Assy. For safety considerations, do not overlook problems with the Assy.
Always check the voltage and waveform between the lead wire of R3756 at connector side (CN3706) and the GND after repairing or replacing the Assy.

Checking the voltage and waveform of the D.F. block:

Note : Due to high voltage, use a Leader Electronics 100:1 Probe (LP-012X) or equivalent to observe the voltage and waveform.

- The voltage and waveform of the lead wire of R3756 at connector side is shown below.
- The voltage and waveform in a 1V period takes the form of a delayed parabola (as shown in Photo 8-1) toward the rear.

Note : The voltage and waveform may not satisfy the standards shown in Photo 8-1 if the parabola waveform and the H size adjustment of the CONVERGENCE-AUDIO AMP Assy are out of alignment. In this case, readjust the waveform and H size and recheck the voltage and waveform.

- After checking the voltage and waveform, adjust the Focus VR (step 8).

8.1.13 When CRT Assy R, G or B was Replaced

Notes:

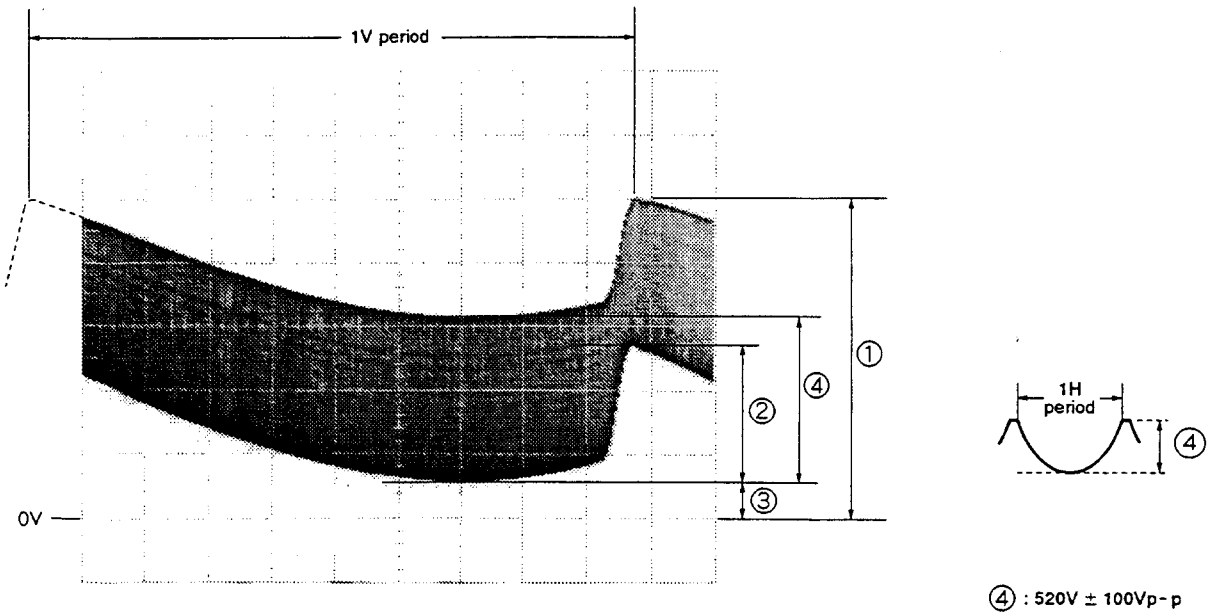
- For details on replacing a CRT Assy, see section "9. Replacing the CRT Assy."
- When one or two tubes were replaced, perform the adjustment referring to the tube not replaced. If a CRT Assy for a color other than green was replaced, be sure to adjust the following items referring to the green.
  1. (step 5) Deflection yoke lean adjustment
  2. (step 6) Screen center adjustment
  3. (step 8) Focus VR adjustment
  4. (step 9) Convergence adjustment
  5. (step 4) Brightness adjustment
  6. (step 10) White balance adjustment
  7. (steps 15 through 18) Pioneer's standard settings

8.1.14 When Lens Assy was Replaced

- (step 7) Focus adjustment of Lens Assy

8.1.15 When Other Assy was Repaired or Replaced

- No adjustment is required.



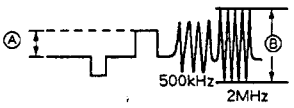
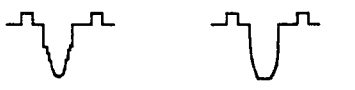
① : 1000V ± 100Vp-p
② : 420V ± 50Vp-p
③ : 120V ± 100Vp-p
④ : 520V ± 100Vp-p

Photo 8-1 Voltage and waveform of D. F. block (lead wire of R3756 at connector side)

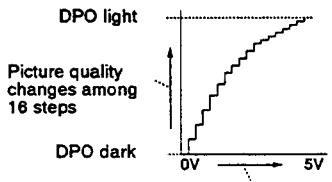
8.2 ADJUSTMENT METHOD

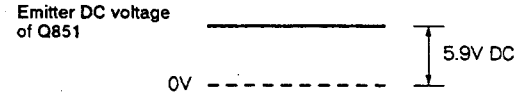
- Adjustment points and test points on are shown in Fig. 8 -5 through Fig. 8-8.
- Perform the adjustment for standard picture quality (Input signal : PAL) unless otherwise noted.
- For information on FACTORY ADJ mode, see pages 116 through 118.

<table>
<tr><th>Step No.</th><th>Adjustment Item</th><th>Input Signal</th><th>Adjustment Point</th><th>Adjustment Procedure</th></tr>
<tr><td rowspan="2">1</td><td>135V power supply adjustment</td><td>Color bar</td><td>VR651 (P)</td><td>Adjust the voltage at both sides of C741 on the POWER SUPPLY - HIGH VOLTAGE Assy to 135 V ± 0.5 V.</td></tr>
<tr><td colspan="4">After performed +135V power supply adjustment, confirm the each voltage as follows.
<table>
<tr><th>Measuring Point</th><th>Voltage</th><th>Measuring Point</th><th>Voltage</th></tr>
<tr><td>Connector A4 (+135V for GND)</td><td>(+135V ± 1V)</td><td>Connector A6 +15V for GND</td><td>16V ± 3V</td></tr>
<tr><td>Connector A2 +8V for GND</td><td>9V±3V</td><td>Connector A6 − 18V for GND</td><td>− 19V ± 3V</td></tr>
<tr><td>Connector A4 +18V for GND</td><td>19V ± 5V</td><td>Connector A7 H.T.+ for H.T. −</td><td>6.45V ± 0.25V</td></tr>
<tr><td>Connector A5 +35V for GND</td><td>36V ± 3V</td><td>Connector A7 +220V for GND</td><td>215V ± 20V</td></tr>
<tr><td>Connector A4 +27V for GND</td><td>30V ± 5V</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>2</td><td>Comb filter adjustment (For NTSC signal only)</td><td>NTSC color bar</td><td>VR751 (I)
L767 (I)</td><td>Adjust so that the 3.58MHz element at TP755 (YOUT) on the I/O - TEXT - Y/C Assy becomes minimum.</td></tr>
<tr><td>3</td><td>Contrast coarse adjustment</td><td>——</td><td>Contrast (remote control unit)</td><td>Note: Perform this adjustment only when a data memory IC (IC503: X24C08P) on the TUNER - UCOM Assy was replaced or when the contrast of ADJUSTMENT OFFSET in FACTORY ADJ mode is extremely shifted.
● Activate ADJUSTMENT OFFSET mode of FACTORY ADJ mode. (telop: blue)
● Press the [3] key on the remote control unit to select CONTR.
● Press the ◿ (VOLUME) [+] or [−] keys so that the telop shows about 0.</td></tr>
<tr><td>4</td><td>Pioneer's standard settings
Brightness adjustment</td><td>Black burst</td><td>Brightness (remote control unit)</td><td>● Adjust the cut off level at TP - G.K on the G CRT DRIVE Assy to 190 V DC.
● Select BRITE by pressing the [4] key on the remote control unit in ADJUSTMENT OFFSET mode of FACTORY ADJ mode, and adjust by pressing the ◿ (VOLUME) [+] or [−] keys.
</td></tr>
<tr><td>5</td><td>Deflection yoke lean adjustment</td><td>Cross signal (or generate a test cross signal for convergence adjustment by applying a free signal.)</td><td>Deflection yoke mounting position of replaced color (CRT Assy) (left and right lean)</td><td>Note :This adjustment is required when a CRT Assy and deflection yoke were replaced.
● Loosen the fixing screw of the deflection yoke for the color to be replaced and turn the adjustment point right and left so that the lean parts of the vertical and horizontal lines at the center of the screen align with the lines of a color not replaced.
● After adjustment, tighten the fixing screw for the deflection yoke.</td></tr>
<tr><td>6</td><td>Screen center adjustment</td><td>Cross signal (or generate a test cross signal for convergence adjustment by applying a free signal.)</td><td>Centering magnet of the deflection yoke of replaced color (CRT Assy) (see Fig. 8-7.)</td><td>Note : This adjustment is to adjust the center point of the screen when a CRT Assy and deflection yoke were replaced.
For red or blue adjustment, turn FACTORY ADJ mode ON and then OFF to place the convergence POSITION at the center of the adjustable range.
● Move the centering magnet of the deflection yoke for the replaced color so that the horizontal and vertical lines at the center of the screen align with the lines for a color not replaced.</td></tr>
</table>

Step No.	Adjustment Item		Input Signal	Adjustment Point	Adjustment Procedure
7	Focus adjustment of Lens Assy		Cross hatch	Lens Assy mounted to replaced color (CRT Assy)	To adjust the lens Assy, remove the screen frame section, and attach a piece of translucent paper such as tracing paper with tape as shown in Fig. 8-8. Place a spacer 64 mm thick between the translucent paper and the cabinet to match the distance from the CRT Assy to the screen surface. (Prepare a spacer of the specified thickness in advance.) ● Move the lens assembly left and right as shown in Fig. 8-8 until the best focusing is obtained.
8	Focus VR adjustment		Cross hatch	Focus VR (VR1)	● Turn the focus VR for best focusing. ● Repeat adjustments for the lens Assy and focus VR.
9	Convergence adjustment		Cross hatch	Adjustment using the remote control unit	● Adjust so that the green cross hatch display normally appears on the screen with only the green CRT drive activated. ● Adjust the red line so that it aligns with the green line on the cross hatch screen with the green and red CRT drives activated. ● Adjust the blue line so that it aligns with a green line on the cross hatch screen with the green and blue CRT activated. Note: For details on the convergence adjustment, see section "8.4 CONVERGENCE ADJUSTMENT."
10	White balance adjustment		Color bar signal without color signal	Screen VR (VR1), VR201 (V) (red drive VR) VR202 (V) (blue drive VR)	● Adjust the screen VRs (red or blue) so that the dark part of the screen becomes gray. Do not move the screen VR (green). ● Adjust the drive VRs (red or blue) so that the bright part of the screen becomes white.
11	Test cross H - center position adjustment		Monoscope	TC501(T)	● Set the test cross screen for adjusting the convergence position. ● Adjust the position so that the test cross is placed at the center of the screen.
12	Tuner section adjustment		The video and audio sections in the tuner section is adjusted. For the items to be adjusted, see section "8.5 TUNER SECTION ADJUSTMENT ".		
13	VCO free run adjustment in the TEXT section		Signal with TELETEXT signal	L601 (I)	Adjust the DC voltage of IC603 pin 28 (FIL2) on the I/O-TEXT-Y/C Assy to 2.5 ± 0.1V.
14	PAL system adjustment (For PAL signal only)		● Perform the glass delay line for PAL system. ● For the items to be adjusted, see section "8. 6 PAL SYSTEM ADJUSTEMNT".		
15	Pioneer's standard settings	Sharpness adjustment	Multiburst	Sharpness (Remote control unit)	● Set to SHARP in ADJUSTMENT OFFSET mode of FACTORY ADJ mode, and adjust by pressing the ◿ (VOLUME) [+] or [-] keys so taht the ratio of Ⓐ (the level from black to white) to Ⓑ (peak-to-peak value of 2 MHz) at TP-220(G) on the VIDEO-DEFLECTION Assy to Ⓐ : Ⓑ = 2 : 3. Ⓐ : Ⓑ = 2 : 3 
16		Color adjustment	Color bar	Color (Remote control unit)	Adjust screen to optimum condition.
17 *1		Tint adjustment	NTSC color bar	Tint (Remote control unit)	Adjust screen to optimum condition.
18		Contrast adjustment	Color bar	Contrast (Remote control unit)	Adjust screen to optimum condition.
			Normal video signal	—	At the TP-BK of B CRT DRIVE Assy, check that the signal is shaped as shown below. 

*1 : Adjust for NTSC and 4.43 NTSC only.

<table>
<tr><th>Step No.</th><th>Adjustment Item</th><th>Input Signal</th><th>Adjustment Point</th><th>Adjustment Procedure</th></tr>
<tr><td rowspan="2">19</td><td rowspan="2">Soft brightness setting</td><td colspan="3">● Set to the ADJUSTMENT S-BRITE mode of FACTORY ADJ mode (telop: yellow).</td></tr>
<tr><td>Normal color video signal (For setting the numeric value only, no signal is possible.)</td><td colspan="2">Set the telop value (setting value) for each setting item, as shown below, using a remote control unit.
<table>
<tr><th>Adjustment items</th><th>Telop (Setting value)</th></tr>
<tr><td>COLOR</td><td>− 24</td></tr>
<tr><td>CONTR</td><td>− 99</td></tr>
<tr><td>BRITE</td><td>+51</td></tr>
<tr><td>Others</td><td>± 0</td></tr>
</table></td></tr>
<tr><td>20</td><td>DPO BASE setting</td><td>Normal color video signal (For setting the numeric value only, no signal is possible.)</td><td>Color, Contrast, Brightness (Remote control unit)</td><td>Note : This adjustment is to set the picture quality during DPO operations which changes the picture quality according to the surrounding light.
The relationship between the change in the surrounding light and change in picture quality is shown below.
 

The voltage input to the pin 4 of IC501 (PD5220A) according to fluctuations in the surrounding light.
Changes in the picture quality set at DPO light and DPO dark are divided into 16 parts by a microcomputer. When the DPO is on, you can change the picture quality in 16 increments according to the surrounding light.
● Press the "ON/OFF", "SELECT/ADJ" and "SET" keys in the PRESET MENU section on the front panel to enter the DPO base setting screen.
● Set the value for DPO light when the surroundings are light enough.
● Set the value for DPO dark when the surroundings are dark enough.
(The light of the surroundings is irrelevant when setting using numbers.)
<table>
<tr><th>Picture quality</th><th>DPO light</th><th>DPO dark</th></tr>
<tr><td>Color</td><td>0</td><td>− 2</td></tr>
<tr><td>Contrast</td><td>0</td><td>− 15</td></tr>
<tr><td>Brightness</td><td>0</td><td>+3</td></tr>
</table>
Note: For details on the setting procedure, refer to the operating instructions.</td></tr>
<tr><td>21</td><td>DPO sensitivity adjustment</td><td>—</td><td>VR851 (F)</td><td>Note: This adjustment is to set the sensitivity of the DPO sensor. Adjust the value as per the customer's request.
The adjusting procedure at the factory is shown below for your reference.
● Illuminate the DPO sensor from the rectangular position to the sensor surface using an incandescent lamp with luminance of 50 lux at the sensor surface.
● Adjust the emitter voltage of Q851 on the FRONT CONTROL Assy to 5.9 V(± 0.1 V).
 
</td></tr>
</table>

8.3 ANODE VOLTAGE MEASURING METHOD

Disconnect the FBT anode cable as outlined in Fig. 8-4. Measure at the point where the cable enters the FBT.

Caution: Take extra precaution when measuring this high voltage. High voltages are also present in surrounding circuit boards (R, G and B CRT DRIVE Assemblies and POWER SUPPLY-HIGH VOLTAGE Assy).

SERVICEMAN WARNING

Before removing the anode cable, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

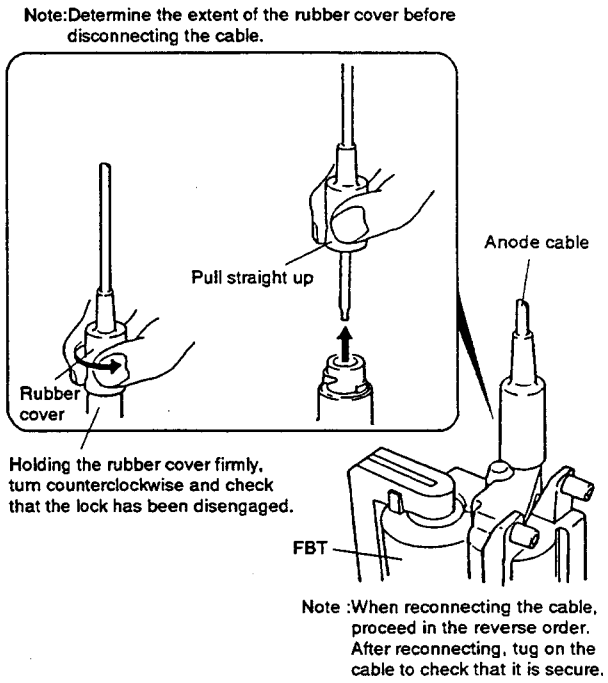
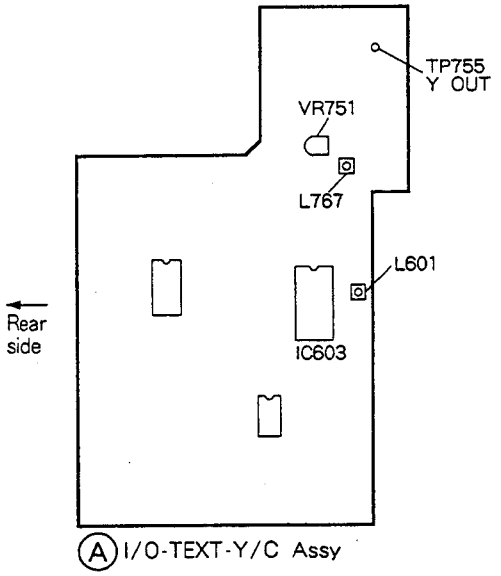
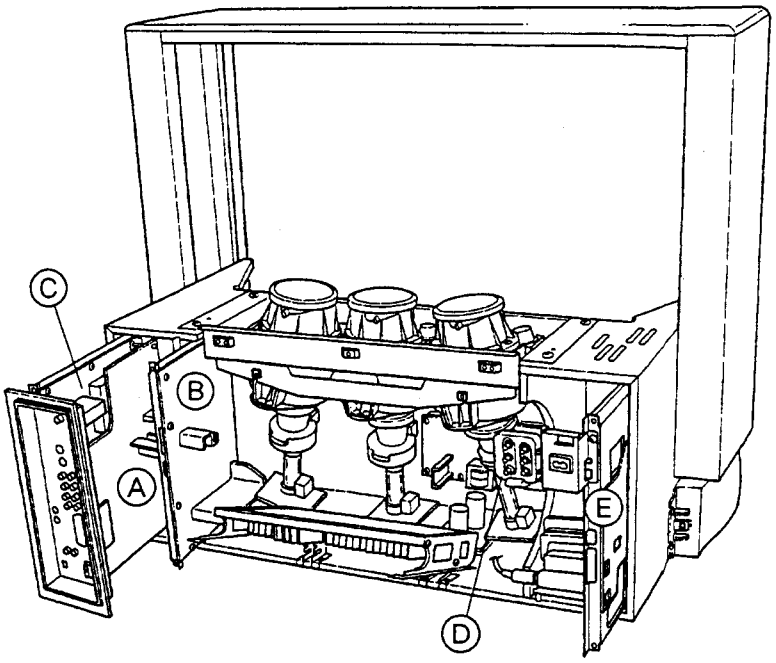
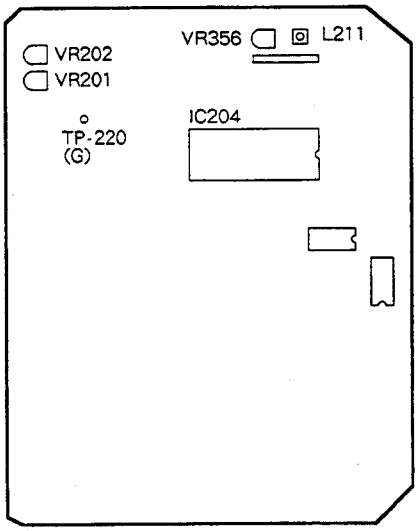

Note:Determine the extent of the rubber cover before disconnecting the cable.
Pull straight up
Anode cable
Rubber cover
Holding the rubber cover firmly, turn counterclockwise and check that the lock has been disengaged.
FBT
Note :When reconnecting the cable, proceed in the reverse order. After reconnecting, tug on the cable to check that it is secure.

Fig. 8-4 Disconnecting the anode cable

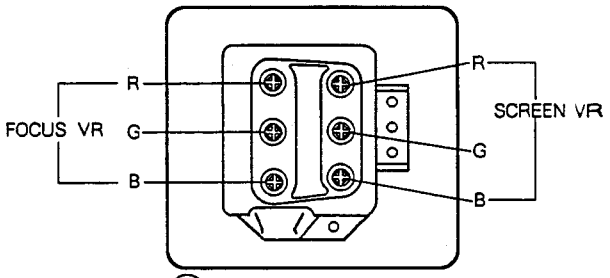


Ⓐ I/O-TEXT-Y/C Assy

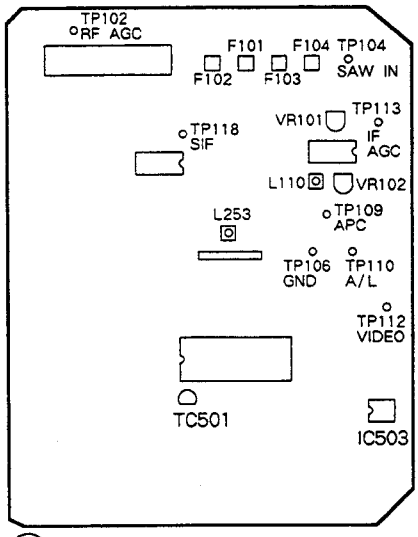




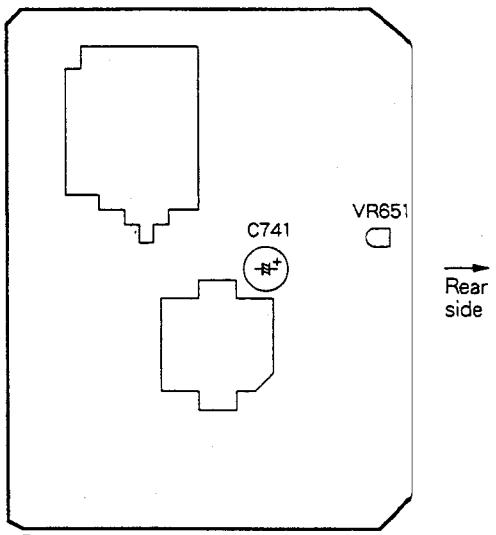
Ⓑ VIDEO-DEFLECTION Assy



Ⓓ Focus variable resistor (VR1)

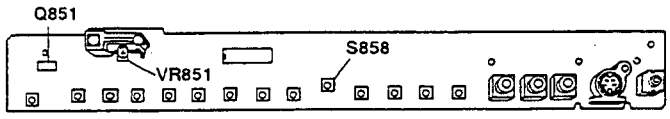


Ⓒ TUNER-UCOM Assy



Ⓔ POWER SUPPLY-HIGH VOLTAGE Assy

Fig. 8-5 Adjustment points in the rear side (1)



FRONT CONTROL Assy

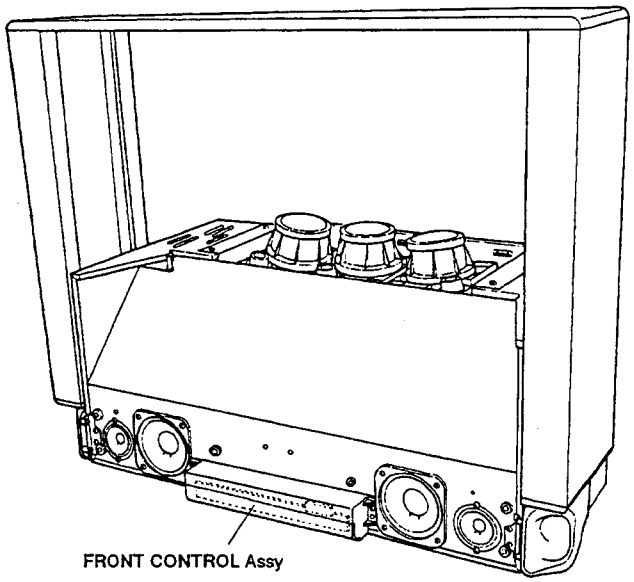


Fig. 8-6 Adjustment points in the front side (1)

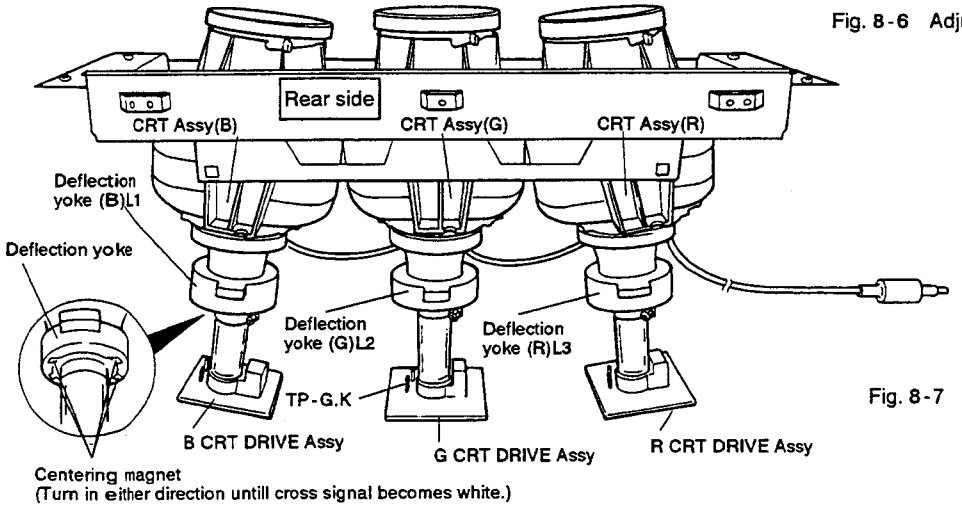
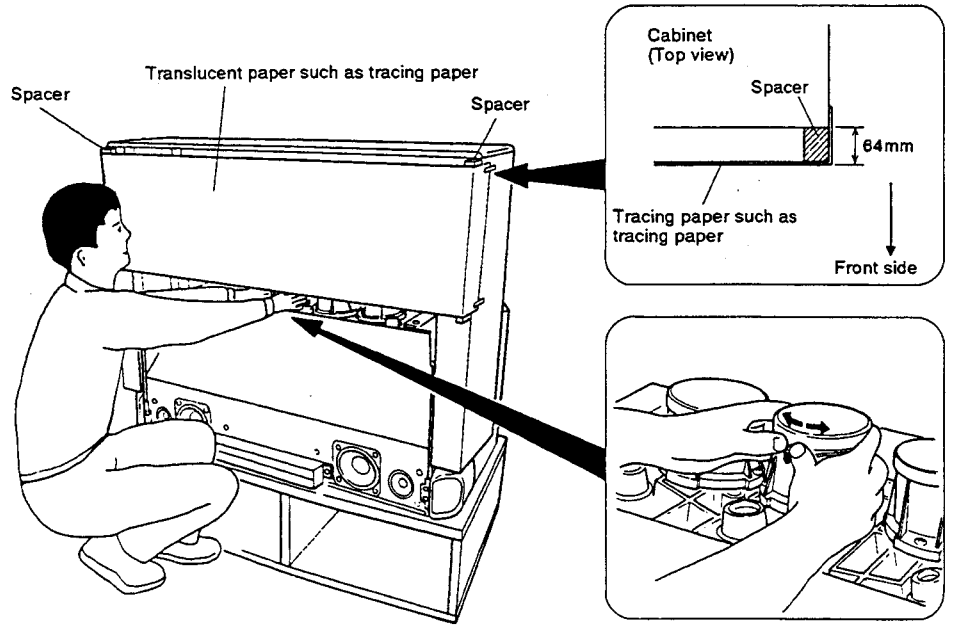


Fig. 8-7 Adjustment points in the rear side (2)



Note :
Attach a sheet of translucent paper, such as tracing paper, while inserting spacers having the thickness 64mm to align it with the regular position of the screen surface. Use spacers which provide the same thickness at both the right and left sides.

Fig. 8-8 Adjustment points in the front side (2)

8.4 CONVERGENCE ADJUSTMENT

8.4.1 Adjustment Method for Convergence

Perform the adjustment in ADJUST CONVERGENCE STD or FINE modes and ADJUST CONVERGENCE OFSET mode of FACTORY ADJ mode. (For how to enter the FACTORY ADJ mode, see section "FACTORY ADJ mode" on page 116.)

- **Operation of the ADJUST CONVERGENCE STD mode**

  The STD mode is to operate the basic functions. This mode can be used to adjust simple distortions.

The letters displayed in the lower left of the screen show the various types of convergence. You can switch the types of convergence by pressing the C-P [+] or [-] key on the remote control. Press the C-P [+] key to switch items in the cycle GH → GV → BH → BV → RH → RV. Press the C-P [-] key to switch items in the cycle in reverse beginning from GH.

The next column to the right displays the setting values.

Set the desired setting value by pressing the ◿ (VOLUME) [+], or [-] key. The adjustment items are displayed on the far right. Each item corresponds to the numeric keys from [1] : STATIC to [9] : SUB PIN on the remote control. STATIC is not displayed when GH or GV is selected.

- **Operation of the ADJUST CONVERGENCE FINE mode**

  Everything in ADJUST CONVERGENCE FINE mode except for the adjustment items is identical to those items in the ADJUST CONVERGENCE STD mode. The numeric key assignments to the adjustment items in the cycle from STATIC to SUB-PIN do not change, however the FINE mode goes into finer detail than the STD mode.

  For example, numeric key [2] is SIZE for both modes, however in FINE mode, you can repeatedly switch the item in the cycle ┌→ SIZE → MID SIZE → 5D SIZE ─┐ by continuously pressing this key. Some items do not have color and H and V adjustments, so refer to the following table for details.

- **Selecting red, green or blue uni-color**

  Color keys of the remote control unit

  [RED] key ON/OFF ····· Red color is ON/OFF
  [GREEN] key ON/OFF ····· Green color is ON/OFF
  [YELLOW] key ON/OFF ····· Blue color is ON/OFF
  [BLUE] key ON/OFF ····· All colors are OFF

  Example: Selecting green uni-color
  Press the [RED] and [YELLOW] keys to select green only.

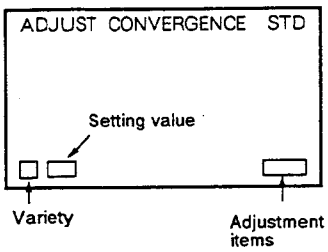
Numeric keys	Adjustment Items	Type GH	GV	RH	RV	BH	BV
[1]	☆ STATIC	/	/	○	○	○	○
[2]	☆ SIZE ↔ MID SIZE ↔ 5D SIZE	○	○	○	○	○	○
		○	○	○	○	○	○
		/	○	○	○	○	○
[3]	☆ LIN ↔ MID LIN ↔ 6D LIN	○	○	○	○	○	○
		○	○	○	○	○	○
		/	○	○	○	○	○
[4]	☆ SKEW ↔ 3D SKEW ↔ 5D SKEW	○	○	○	○	○	○
		/	○	○	○	○	○
		/	○	○	○	○	○
[5]	☆ KEY ↔ MID KEY ↔ 3D KEY ↔ MID 3D KEY	○	○	○	○	○	○
		○	○	○	○	○	○
		○	○	○	○	○	○
		/	○	○	○	○	○

Numeric keys	Adjustment Items	Type GH	GV	RH	RV	BH	BV
[6]	☆ SUB KEY ↔ MID SUB KEY ↔ 3D SUB KEY ↔ M3D SUB KEY	○	○	○	○	○	○
		○	○	○	○	○	○
		/	○	○	○	○	○
		/	○	○	○	○	○
[7]	☆ BOW ↔ 4D BOW ↔ 6D BOW	○	○	○	○	○	○
		/	○	○	○	○	○
		/	○	○	○	○	○
[8]	☆ PIN ↔ MID PIN ↔ 4D PIN ↔ M4D PIN	○	○	○	○	○	○
		○	○	○	○	○	○
		○	○	○	○	○	○
		/	○	○	○	○	○
[9]	☆ SUB PIN ↔ MID SUB PIN ↔ 4D SUB PIN ↔ M4D SUB PIN	○	○	○	○	○	○
		○	○	○	○	○	○
		/	○	○	○	○	○
		/	○	○	○	○	○

○ =Yes, /=No

☆: Item in ADJUST CONVERGENCE STD mode.
All items in the above table are in the ADJUST CONVERGENCE FINE mode.

1. ADJUST CONVERGENCE STD mode



- Adjust the input signals using PAL (50 Hz) signals.
- When it is necessary to adjust the input signal using NTSC (60 Hz) signals, see "3. ADJUST CONVERGENCE OFSET mode."

• Variety

GH (Green • Horizontal)
↓
GV (Green • Vertical)
↓
BH (Blue • Horizontal)
↓
BV (Blue • Vertical)
↓
RH (Red • Horizontal)
↓
RV (Red • Vertical)

The variety changes in the cycle shown above by pressing the C-P [+] key and changes in reverse by pressing the C-P [-] key.

• Setting value

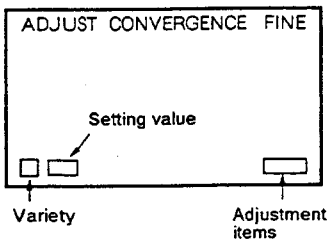
Adjust the value by pressing the ◿ (VOLUME) [+], [-] keys.

• Adjustment items (assigned to the numeric keys)

[1]: STATIC (*1)
[2]: SIZE
[3]: LIN
[4]: SKEW
[5]: KEY
[6]: SUB KEY
[7]: BOW
[8]: PIN
[9]: SUB PIN

(*1) : STATIC is not displayed at GH and GV.

2. ADJUST CONVERGENCE FINE mode



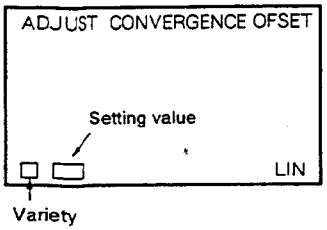
- The variety and setting values are the same as those in the ADJUST CONVERGENCE STD mode.
- The adjustment items in the FINE mode are more complex than those in the ADJUST CONVERGENCE STD mode as shown below. You can adjust these fine convergence items in this mode.
- Adjustment items (assigned to the numeric keys)

[1] : STATIC (* 1)

[2] : SIZE → MID SIZE → 5D SIZE (* 2) → SIZE
[3] : LIN → MID LIN → 6D LIN (* 2) → LIN
[4] : SKEW → 3D SKEW (* 2) → 5D SKEW (* 2) → SKEW
[5] : KEY → MID KEY → 3D KEY → MID 3D KEY (* 2) → KEY
[6] : SUB KEY → MID SUB KEY → 3D SUB KEY (* 2) → M3D SUB KEY (* 2) → SUB KEY
[7] : BOW → 4D BOW (* 2) → 6D BOW (* 2) → BOW
[8] : PIN → MID PIN → 4D PIN → M4D PIN (* 2) → PIN
[9] : SUB PIN → MID SUB PIN → 4D SUB PIN (* 2) → M4D SUB PIN (* 2) → SUB PIN

(* 1): STATIC is not displayed at GH and GV.
(* 2): These are not displayed at GH.

3. ADJUST CONVERGENCE OFSET mode



- Adjust the input signals using NTSC (60 Hz) signals.
- Settting method of the setting value is the same as that of "1. ADJUST CONVERGENCE STD mode".
- When adjusting the convergence in this mode, set LIN of RH and BH to +5 (RH) and -5 (BH) respectively (typical adjustment values set at the factory). After making these adjustments, re-enter this mode and adjust the LIN of RH and BH so that best linearity for the vertical lines is obtained on the screen. (Adjust the vertical lines to the left and right of R and B so that they align with G.)

• Variety

RH
↓
BH

The variety changes in the cycle shown above by pressing the C-P [+] key and changes in reverse by pressing the C-P [-] key.

8.4.2 Green Line Adjustment

- Adjust the input signals using PAL (50 Hz) signals.
- A green line is a reference line for the red and blue lines. Be sure to adjust precisely.
- Perform the adjustment by the ◿ (VOLUME) [+], [-] keys on the remote control unit.
- Perform the green line adjustment with a green uni-color.

• Horizontal Correction Adjustment of Green Line

Step No.	Adjustment Item	Adjustment Procedure
1	GH-SKEW *	Adjust the vertical green line in the center of the screen so that the line is an undistorted straight line with no inclination as shown in Fig. 8-9.
2	GH-BOW *	
3	Repeat steps 1 and 2.	
4	GH-SIZE *	Adjust the vertical green lines on the screen so that the intervals at green lines are equal and the size is correct as shown in Fig. 8-9.
5	GH-MID SIZE	
6	GH-LIN *	
7	GH-MID LIN	
8	Repeat steps 4 through 7.	
9	GH-KEY *	Adjust so that the green vertical lines in the right and left sections of the screen are not leaned as shown in Fig. 8-9 and 8-10.
10	GH-MID KEY (Note 1)	
11	GH-SUB KEY *	
12	GH-MID SUB KEY (Note 1)	
13	Repeat steps 9 through 12.	
14	GH-PIN *	Adjust the vertical green lines in the right and left sections of the screen so that they are undistorted straight lines as shown in Fig. 8-9 and 8-10.
15	GH-MID PIN (Note 1)	
16	GH-SUB PIN *	
17	GH-MID SUB PIN (Note 1)	
18	GH-3D KEY	
19	GH-4D PIN	
20	Repeat steps 14 through 19.	

* : Exists in both STD and FINE modes.
(Note 1) : Adjust with attention to the green vertical lines in the left quarter and right quarter of the screen.

• **Vertical Correction Adjustment of Green Line**

Step No.	Adjustment Item	Adjustment Procedure
1	GV-SKEW *	Adjust the green horizontal line in the center of the screen so that the line is an undistorted straight line with no inclination as shown in Fig. 8-11.
2	GV-BOW *	
3	GV-3D SKEW	
4	GV-4D BOW	
5	GV-5D SKEW	
6	GV-6D BOW	
7	Repeat steps 1 through 6.	
8	GV-SIZE *	Adjust the green horizontal lines in the center of the screen so that the intervals at green lines are equal and the size is correct as shown in Fig. 8-11.
9	GV-LIN *	
10	GV-MID SIZE	
11	GV-MID LIN	
12	GV-5D SIZE	
13	GV-6D LIN	
14	Repeat steps 8 through 13.	
15	GV-KEY *	Adjust so that the green horizontal lines in the upper and lower sections of the screen is not leaned as shown in Fig. 8-11 and 8-12.
16	GV-MID KEY (Note 2)	
17	GV-SUB KEY *	
18	GV-MID SUB KEY (Note 2)	
19	Repeat steps 15 through 18.	
20	GV-3D KEY	Adjust the green horizontal lines in the upper and lower sections of the screen so that they are undistorted straight lines as shown in Fig. 8-11 and 8-12.
21	GV-MID 3D KEY (Note 2)	
22	GV-3D SUB KEY	
23	GV-M3D SUB KEY (Note 2)	
24	GV-PIN *	
25	GV-MID PIN (Note 2)	
26	GV-4D PIN	
27	GV-M4D PIN (Note 2)	
28	GV-SUB PIN *	
29	GV-MID SUB PIN (Note 2)	
30	GV-4D SUB PIN	
31	GV-M4D SUB PIN (Note 2)	
32	Repeat steps 20 through 31.	

* : Exists in both STD and FINE modes.
(Note 2) : Adjust with attention to the green horizontal lines in the left quarter and right quarter of the screen.

8.4.3 Red Line Adjustment

- Adjust the input signals using PAL (50 Hz) signals. When it is necessary to adjust input signals using NTSC (60 Hz) signals, see "3. ADJUST CONVERGENCE OFSET mode" on page 128.
- Adjust the red line convergence using a green line and red line.
- Adjust it by overlaying a red line on a green line using the ◿ (VOLUME) [+], [-] keys on the remote control unit so that the line becomes yellow.
- After making the adjustments for all items, perform fine adjustment referring to the whole screen.

• Horizontal Correction Adjustment of Red Line

Step No.	Adjustment Item	Adjustment Procedure
1	RH-STATIC *	Adjust the center of the red vertical line so that it aligns with the center of the green vertical line as shown in Fig. 8-9.
2	RH-SKEW *	Adjust so that the red vertical line in the center of the screen converge in the green vertical line as shown in Fig. 8-9.
3	RH-BOW *	
4	RH-3D SKEW	
5	RH-4D BOW	
6	RH-5D SKEW	
7	RH-6D BOW	
8	Repeat steps 2 through 7.	
9	RH-SIZE *	Adjust so that the intevals of the red vertical lines in the center of the screen converge them in the green vertical lines as shown in Fig. 8-9.
10	RH-LIN *	
11	RH-MID SIZE	
12	RH-MID LIN	
13	RH-5D SIZE	
14	RH-6D LIN	
15	Repeat steps 9 through 14.	
16	RH-KEY *	Adjust so that the red vertical lines in the upper and lower sections of the screen are not leaned as shown in Fig. 8-9 and 8-10.
17	RH-MID KEY (Note 3)	
18	RH-SUB KEY *	
19	RH-MID SUB KEY (Note 3)	
20	Repeat steps 16 through 19.	
21	RH-3D KEY	Adjust so that the red vertical lines in the upper and lower sections of the screen converge in the green vertical lines and lines are undistorted straight lines as shown in Fig. 8-9 and 8-10.
22	RH-MID 3D KEY (Note 3)	
23	RH-3D SUB KEY	
24	RH-M3D SUB KEY (Note 3)	
25	RH-PIN *	
26	RH-MID PIN (Note 3)	
27	RH-4D PIN	
28	RH-M4D PIN (Note 3)	
29	RH-SUB PIN *	
30	RH-MID SUB PIN (Note 3)	
31	RH-4D SUB PIN	
32	RH-M4D SUB PIN (Note 3)	
33	Repeat steps 21 through 32.	

* : Exists in both STD and FINE modes.

(Note 3) : Adjust with attention to the red vertical lines in the left quarter and right quarter of the screen.

• **Vertical Correction Adjustment of Red Line**

Step No.	Adjustment Item	Adjustment Procedure
1	RV-STATIC *	Adjust the center of the red horizontal line so that it aligns with the center of the green horizontal line as shown in Fig. 8-9.
2	RV-SKEW *	Adjust so that the red horizontal line in the center of the screen converge in the green horizontal line as shown in Fig. 8-11.
3	RV-BOW	
4	RV-3D SKEW	
5	RV-4D BOW	
6	RV-5D SKEW	
7	RV-6D BOW	
8	Repeat steps 2 through 7.	
9	RV-SIZE *	Adjust so that the intervals of the red horizontal lines in the center of the screen converge them in the green horizontal lines as shown in Fig. 8-11.
10	RV-LIN *	
11	RV-MID SIZE	
12	RV-MID LIN	
13	RV-5D SIZE	
14	RV-6D LIN	
15	Repeat steps 9 through 14.	
16	RV-KEY *	Adjust so that the red horizontal lines in the right and left sections of the screen are not leaned as shown in Fig. 8-11 and 8-12.
17	RV-MID KEY (Note 4)	
18	RV-SUB KEY *	
19	RV-MID SUB KEY (Note 4)	
20	Repeat steps 16 through 19.	
21	RV-3D KEY	Adjust so that the red horizontal lines in the right and left sections of the screen converge in the green horizontal lines and lines are undistorted straight lines as shown in Fig. 8-11 and 8-12.
22	RV-MID 3D KEY (Note 4)	
23	RV-3D SUB KEY	
24	RV-M3D SUB KEY (Note 4)	
25	RV-PIN *	
26	RV-MID PIN (Note 4)	
27	RV-4D PIN	
28	RV-M4D PIN (Note 4)	
29	RV-SUB PIN *	
30	RV-MID SUB PIN (Note 4)	
31	RV-4D SUB PIN	
32	RV-M4D SUB PIN (Note 4)	
33	Repeat steps 21 through 32.	

* : Exists in both STD and FINE modes.
(Note 4) : Adjust with attention to the red horizontal lines in the left quarter and right quarter of the screen.

8.4.4 Blue Line Adjustment

- Adjust the input signals using PAL (50 Hz) signals. When it is necessary to adjust input signals using NTSC (60 Hz) signals, see "3. ADJUST CONVERGENCE OFSET mode" on page 128.
- Adjust the blue line convergence using a green line and blue line.
- Adjust it by overlaying a blue line on a green line using the ◿ (VOLUME) [+], [-] keys on the remote control unit so that the line becomes cyan.
- After making the adjustments for all items, perform fine adjustment referring to the whole screen.

• Horizontal Correction Adjustment of Blue Line

Step No.	Adjustment Item	Adjustment Procedure
1	BH-STATIC *	Adjust the center of the blue vertical line so that it aligns with the center of the green vertical line as shown in Fig. 8-9.
2	BH-SKEW *	Adjust so that the blue vertical line in the center of the screen converge in the green vertical line as shown in Fig. 8-9.
3	BH-BOW *	
4	BH-3D SKEW	
5	BH-4D BOW	
6	BH-5D SKEW	
7	BH-6D BOW	
8	Repeat steps 2 through 7.	
9	BH-SIZE *	Adjust so that the intervals of the blue vertical lines in the center of the screen converge them in the green vertical lines as shown in Fig. 8-9.
10	BH-LIN *	
11	BH-MID SIZE	
12	BH-MID LIN	
13	BH-5D SIZE	
14	BH-6D LIN	
15	Repeat steps 9 through 14.	
16	BH-KEY *	Adjust so taht the blue vertical lines in the upper and lower sections of the screen are not leaned as shown in Fig. 8-9 and 8-10.
17	BH-MID KEY (Note 5)	
18	BH-SUB KEY *	
19	BH-MID SUB KEY (Note 5)	
20	Repeat steps 16 through 19.	
21	BH-3D KEY	Adjust so that the blue vertical lines in the upper and lower sections of the screen converge in the green vertical lines and lines are undistorted straight lines as shown in Fig. 8-9 and 8-10.
22	BH-MID 3D KEY (Note 5)	
23	BH-3D SUB KEY	
24	BH-M3D SUB KEY (Note 5)	
25	BH-PIN *	
26	BH-MID PIN (Note 5)	
27	BH-4D PIN	
28	BH-M4D PIN (Note 5)	
29	BH-SUB PIN *	
30	BH-MID SUB PIN (Note 5)	
31	BH-4D SUB PIN	
32	BH-M4D SUB PIN (Note 5)	
33	Repeat steps 21 through 32.	

* : Exists in both STD and FINE modes.
(Note 5) : Adjust with attention to the blue vertical lines in the left quarter and right quarter of the screen.

• **Vertical Correction Adjustment of Blue Line**

Step No.	Adjustment Item	Adjustment Procedure
1	BV-STATIC *	Adjust the center of the blue horizontal line so that it aligns with the center of the green horizontal line as shown in Fig. 8-9.
2	BV-SKEW *	Adjust so that the blue horizontal line in the center of the screen converge in the green horizontal line as shown in Fig. 8-11.
3	BV-BOW	
4	BV-3D SKEW	
5	BV-4D BOW	
6	BV-5D SKEW	
7	BV-6D BOW	
8	Repeat steps 2 through 7.	
9	BV-SIZE *	Adjust so that the intervals of blue horizontal lines in the center of the screen converge them in the green horizontal lines as shown in Fig. 8-11.
10	BV-LIN *	
11	BV-MID SIZE	
12	BV-MID LIN	
13	BV-5D SIZE	
14	BV-6D LIN	
15	Repeat steps 9 through 14.	
16	BV-KEY *	Adjust so that the blue horizontal lines in the right and left sections of the screen are not leaned as shown in Fig. 8-11 and 8-12.
17	BV-MID KEY (Note 6)	
18	BV-SUB KEY *	
19	BV-MID SUB KEY (Note 6)	
20	Repeat steps 16 through 19.	
21	BV-3D KEY	Adjust so that the blue horizontal lines in the right and left sections of the screen converge in the green horizontal lines and lines are undistorted straight lines as shown in Fig. 8-11 and 8-12.
22	BV-MID 3D KEY (Note 6)	
23	BV-3D SUB KEY	
24	BV-M3D SUB KEY (Note 6)	
25	BV-PIN *	
26	BV-MID PIN (Note 6)	
27	BV-4D PIN	
28	BV-M4D PIN (Note 6)	
29	BV-SUB PIN *	
30	BV-MID SUB PIN (Note 6)	
31	BV-4D SUB PIN	
32	BV-M4D SUB PIN (Note 6)	
33	Repeat steps 21 through 32.	

* : Exists in both STD and FINE modes.
(Note 6) : Adjust with attention to the blue horizontal lines in the left quarter and right quarter of the screen.

• Finally, select all colors. Verify that the vertical and horizontal green line converges in the vertical and horizontal red and blue lines. Perform fine adjustment of the lines if they are not converged.

Note : When adjusting the green lines, the following items are adjusted for all colors (green, red, blue) at the same time.

- GH-SIZE
- GH-KEY
- GH-PIN
- GH-3D KEY
- GH-4D PIN
- GV-SIZE
- GV-LIN
- GV-MID SIZE

• Manual Convergence Adjustment (Horizontal Direction)

•The direction of the arrows in the figure below shows the direction when the ◿ (VOLUME) ⊞ key is pressed.
The direction of the arrows is reversed when the ◿ (VOLUME) ⊟ key is pressed.

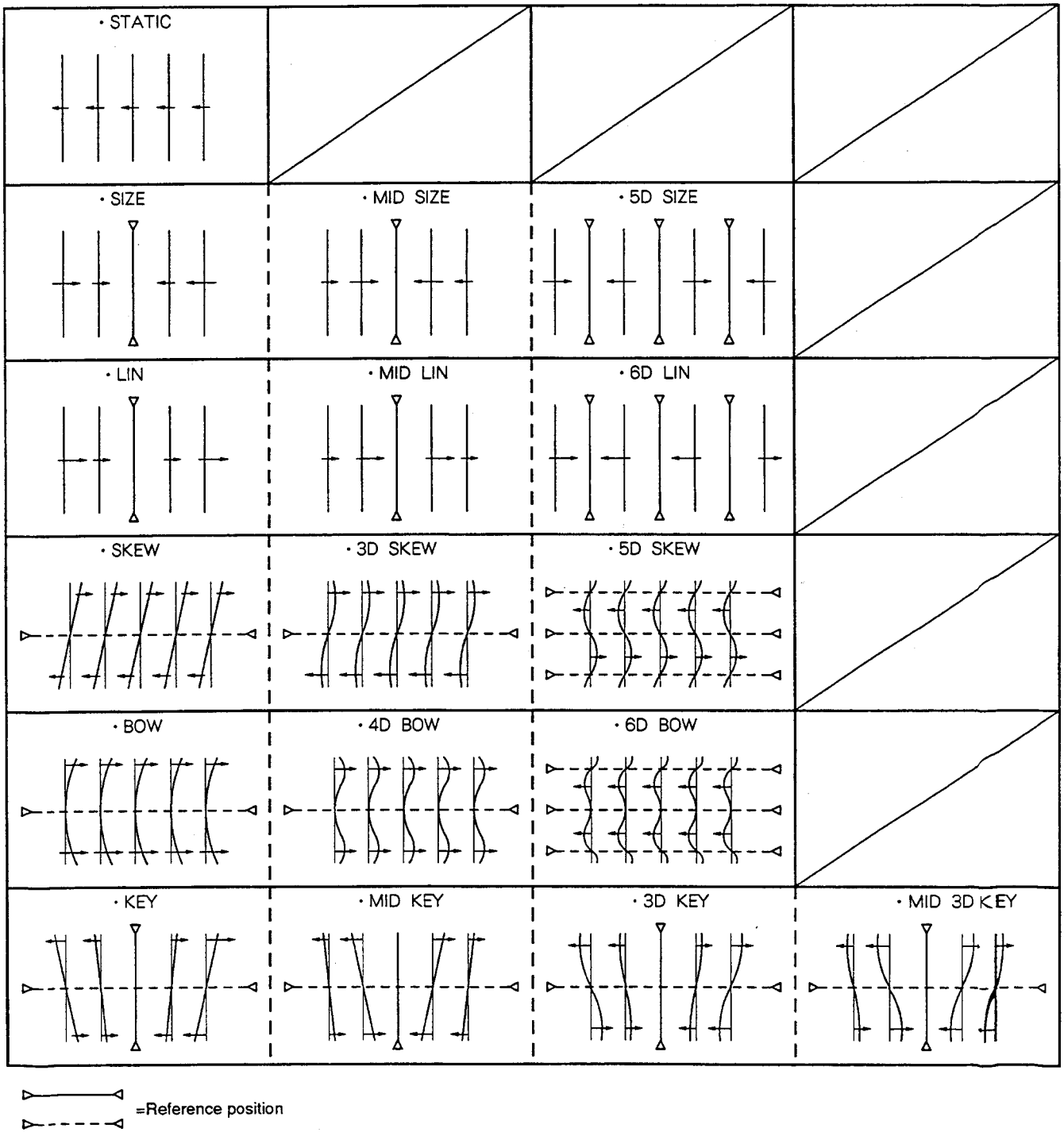


Fig. 8-9 Horizontal correction (1)

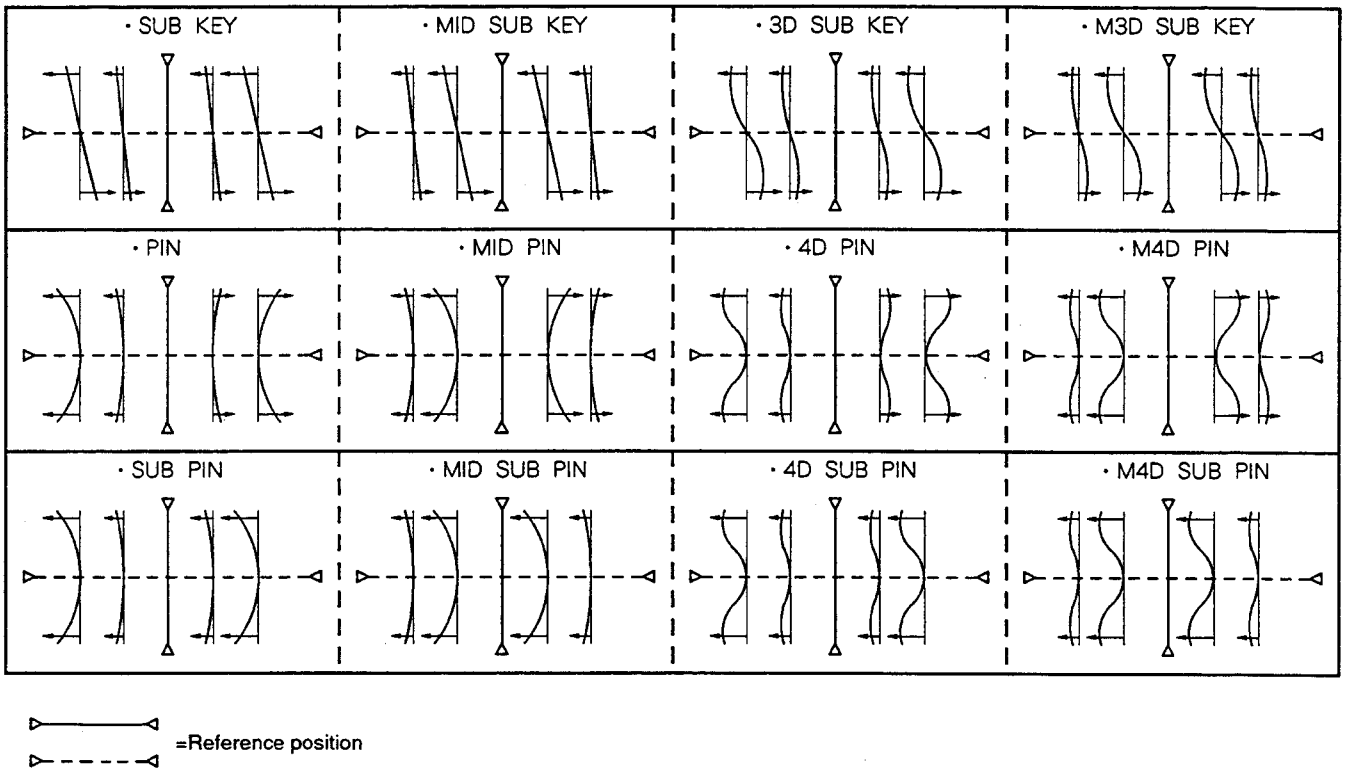


Fig. 8-10 Horizontal correction (2)

• Manual Convergence Adjustment (Vertical Direction)

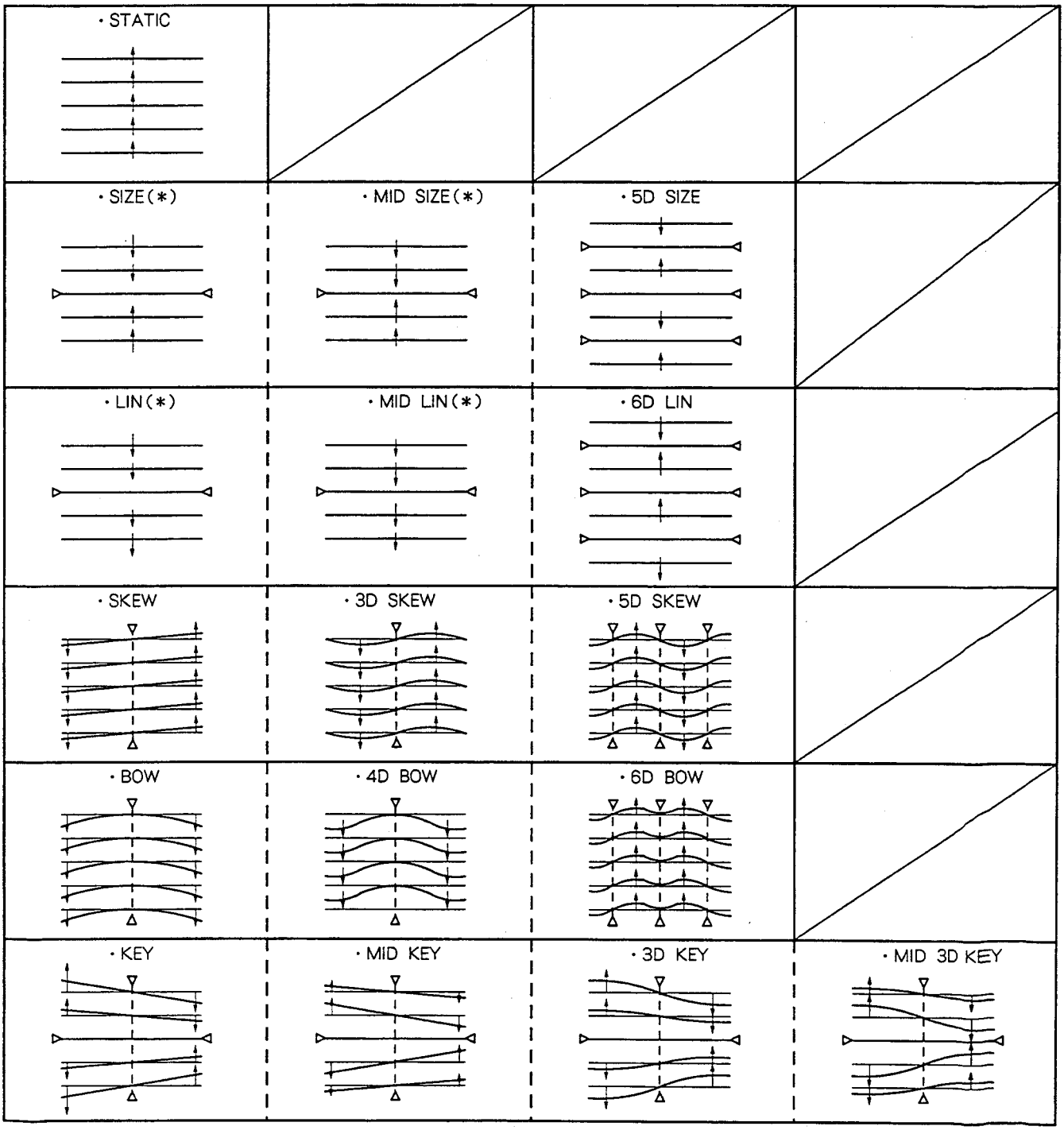


Fig. 8-11 Vertical correction (1)

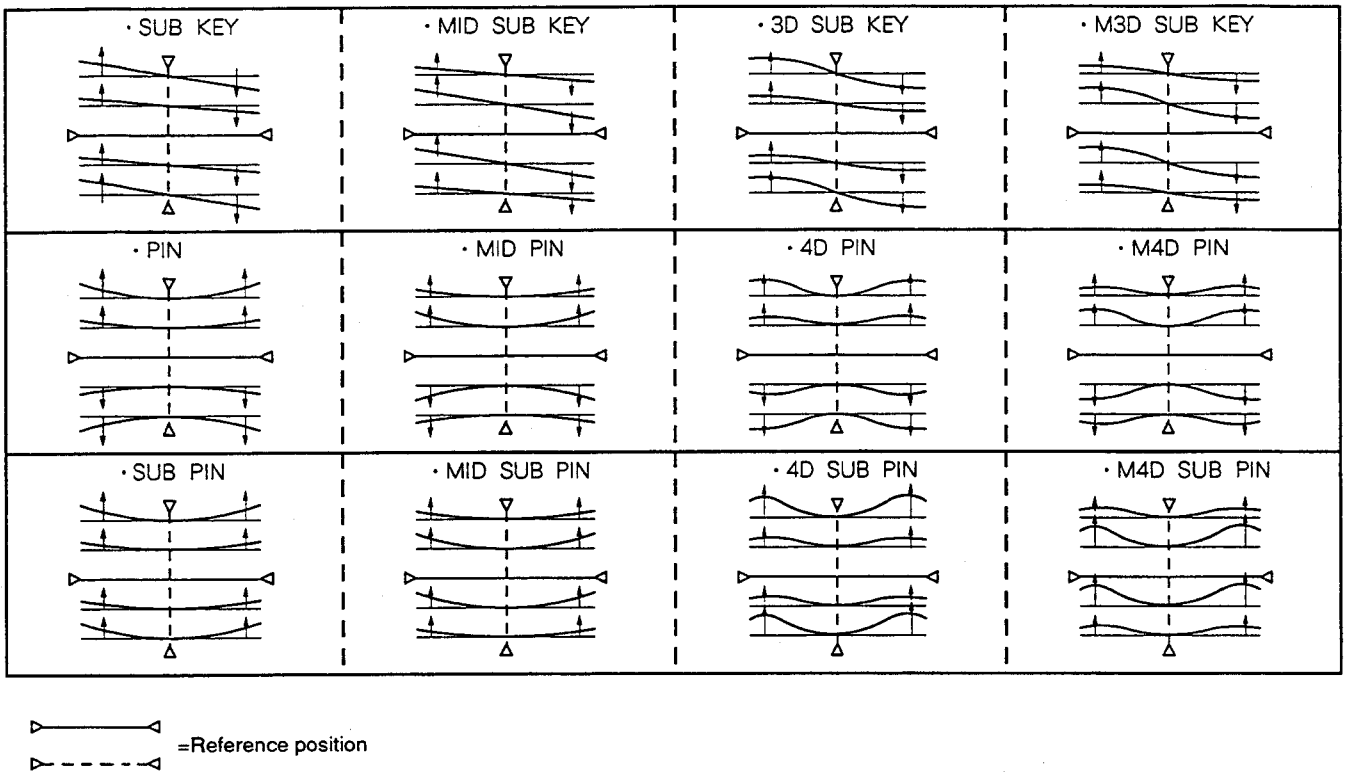


Fig. 8-12 Vertical Correction (2)

8.5 TUNER SECTION ADJUSTMENT

8.5.1 When TUNER-UCOM Assy was Repaired

- Adjustment test points (TP) are located in the TUNER-UCOM Assy unless otherwise specified.

(1) Tuner Section Adjustment

- The items to be adjusted here depend on the local TV standard systems. The systems for which the adjustments are required are shown in the respective rows of the table.
- For the necessary input signal, see Table 8-1. If not mentioned in the table, supply the signals to the antenna input terminal. Observe Fig. 8-14 when connecting.
- When receiving another TV system after performing the adjustments with the specified TV system, the reception condition may become insufficient. In this case, readjust with the current TV system or the best systems specified in Table 8-1.
- The trap adjustment in step 3 is separately described in another table. See section 8.5.1 (2).
- This model is not equipped with the AFT (Automatic Fine Tuning) function.

Table 8-1

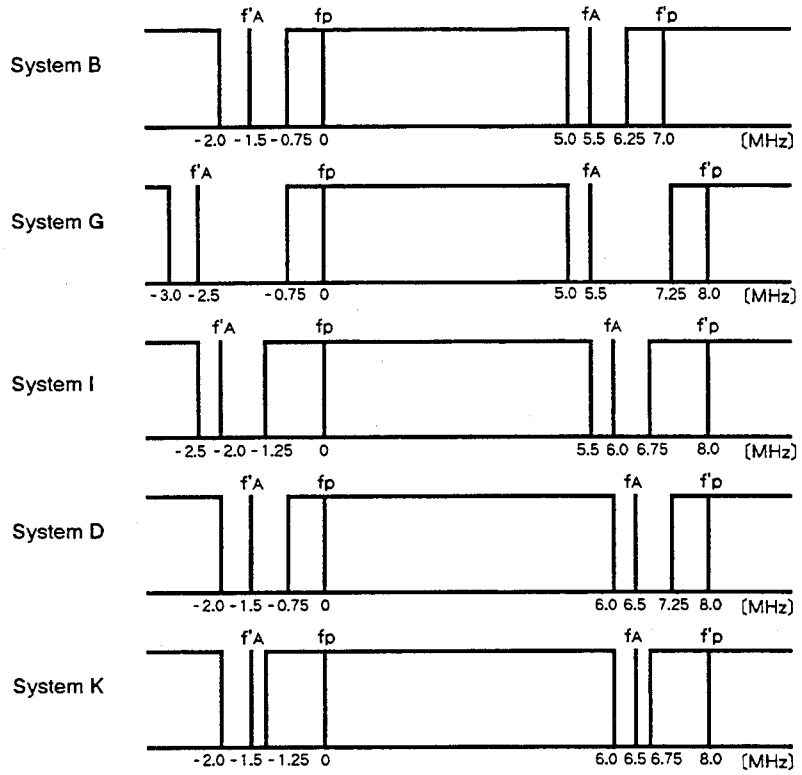
• Values shown for "fp" in the table are the reference values. Set for the nearest frequency and channel of those available in your servicing area.

Signal No.	Signal Contents	Antenna input Level *2	SG system setting *1
①	fp=196.25MHz, Multi burst Audio ; 1kHz, 100% MOD. monaural	60 dBμV	Any of B, G, I, D and K (B and G are the best.)
②	fp=175.25MHz, 100% white Audio ; 1kHz, 100% MOD. monoural	80 dBμV	

*1: Set the SG system to the local TV system.

*2: Set the SG audio level to a value lower than the antenna input level by the following value.
• System B : 10dB , • System G : 10dB , • System I : 7dB , • System D :7dB , • System K : 7dB

Step No.	Adjustment Item	System for which the adjustment is required	Input Signal	Adjustment Point	Adjustment Procedure
1	Trap adjustment	This adjustment depends the local TV system. See section 8.5.1 (2).			
2	Video adjustment	B/G, I, D/K	Signal ②	L110 (T)	Check that the video signal (100% white) is provided to TP-VIDEO (TP112). If not, adjust the video signal.
3				—	Measure the DC voltage of TP-APC (TP109) when TP-IF AGC (TP113) and TP-GND (TP106) are short circuited.
4				L110 (T)	Release TP-IF AGC (TP113) and TP-GND (TP106) and adjust the DC voltage of TP-APC (TP109) to ± 100mV with respect to the value obtained in step 3.
5	Video trap adjustment	B/G, I, D/K	Signal ②	F102 (T)	The broadcast of B/G system is receiverd with I system and adjust the output level of TP-SIF (TP118) to minimum.
6	AGC adjustment	B/G, I, D/K	Signal ①	VR101 (T)	Adjust DC voltage of TP-RF AGC (TP102) to 6.5V ± 0.3V.
7	Video level adjustment		Signal ②	VR102 (T)	Adjust the output level of video signal at TP-VIDEO (TP112) to 2.0Vp-p ± 0.1V.
8	FM audio detection adjustment	B/G, I, D/K	Signal ②	L253 (T)	Adjust the audio output level at TP-A/L (TP110) to maximum and the distortion ratio to minimum.



NOTE: fp ;Video carrier
fA ;Audio carrier
f'p ;Upper adjacent video carrier
f'A ;Lower adjacent audio carrier
IF ;38.9(MHz)

Fig. 8-13 Relationship between the video and audio carrier frequencies of the TV system

(2) Trap Adjustment

- This adjustment is separately described, as the adjustment procedure of the tuner section depends on the TV standard systems.
- For the signal to be input, see Table 8-2. Connect the signal to the antenna input terminal.

Table 8-2 Input signal

• Use the channel specified for the signal ①.

Signal No.	Video	Audio	Antenna Input Level	Channel
Signal ①	Color bar	1kHz, 100% MOD.	80dBμV	Free channel.
Signal ②				Next higher channel of the signal ①.
Signal ③				Next lower channel of the signal ①.

Note : Set the SG audio level to a value lower than the antenna input level by the following value.
• System B : 10dB , • System G : 10dB , • System I : 7dB , • System D : 7dB , • System K : 7dB

• For System B

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	Adjacent video trap adjustment	Signal ②	F101 (T)	Adjust the 31.9MHz element of TP-SAW IN (TP104) to a minimum.
3-2	Audio trap adjustment	Signal ①	F104 (T)	Adjust the 33.4MHz element of TP-SAW IN (TP104) to a minimum.
3-3	Adjacent audio trap adjustment	Signal ③	F103 (T)	Adjust the 40.4MHz element of TP-SAW IN (TP104) to a minimum.

• For System G

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	F101 adjustment	——	F101 (T)	Adjust only when the picture is not displayed correctly.
3-2	Audio trap adjustment	Signal ①	F104 (T)	Adjust the 33.4MHz element of TP-SAW IN (TP104) to a minimum.
3-3	F103 adjustment	——	F103 (T)	Adjust only when the picture is not displayed correctly.

• For System I

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	Audio trap adjustment	Signal ①	F101 (T)	Adjust the 32.9MHz element of TP-SAW IN (TP104) to a minimum.
3-2	F104 adjustment	——	F104 (T)	Adjust only when the picture is not displayed correctly.
3-3	F103 adjustment	——	F103 (T)	

• For any of System D, K

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	Audio trap adjustment	Signal ①	F101 (T)	Adjust the 32.4MHz element of TP-SAW IN (TP104) to a minimum.
3-2	F104 adjustment	——	F104 (T)	Adjust only when the picture is not displayed correctly.
3-3	Adjacent audio trap adjustment	Signal ③	F103 (T)	Adjust the 40.4MHz element of TP-SAW IN (TP104) to a minimum.

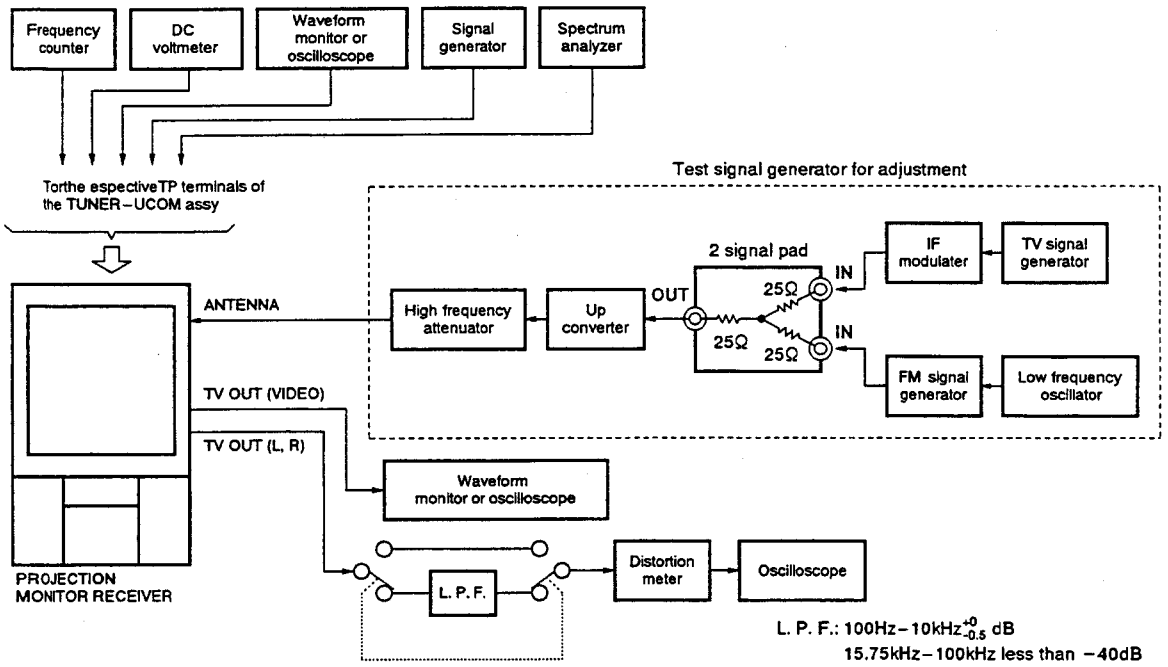


Fig. 8-14 Connection diagram when adjusting the tuner section

8.6 PAL SYSTEM ADJUSTMENT

- The adjustment requires the DEM pattern.
- If the adjustment is not correctly performed, colors change at each scanning line, and this can be judged only by using the DEM pattern.

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
1	Adjustment of glass delay line for PAL demodulator.	PAL DEM pattern	—	Set oscilloscope as follows : H=2mS/div ; V=100mV/div. Observe the waveforms at pin 60 (R-Y IN) and pin 62 (B-Y IN) of IC204.
2			L211 (V)	Adjust so that the waveform of the measuring area 1 in Fig. 8-16 (Fig. 8-17 a) appears as shown in Fig. 8-17 b.
3			VR356 (V)	Adjust so that the waveform of the measuring area 2 in Fig. 8-16 appears as shown in Fig. 8-17 c.
4	Repeat steps 5-2 and 5-3 until the optimum picture is obtained. (Adjust so that the measuring area 1 is set below 50mVp-p, and the measuring area 2 is set below 180mVp-p.)			

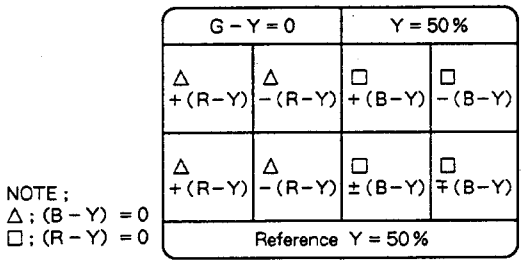


Fig. 8-15 DEM pattern

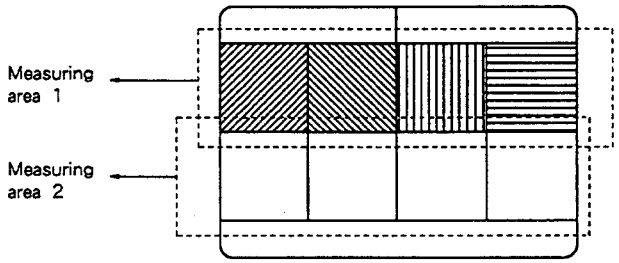


Fig. 8-16 Measuring area

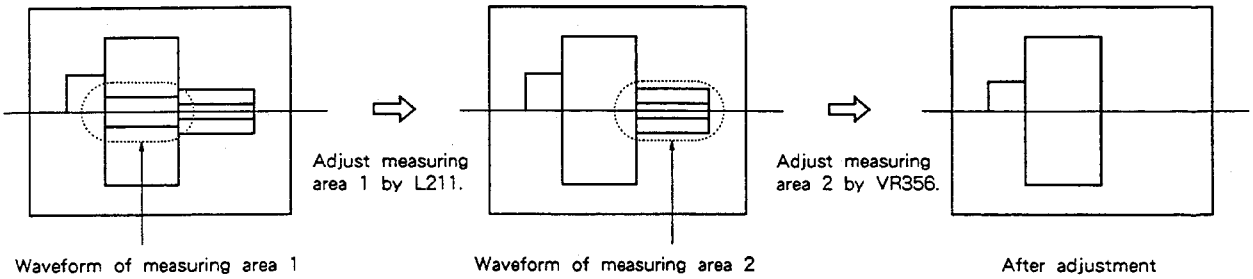


Fig. 8-17 Oscilloscope screen

9. REPLACING THE CRT ASSY

Serviceman Warning
When replacing the CRT assy, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

The anode cables of the CRT assy R, G, and B in PROJECTION MONITOR RECEIVER are connected in series as shown in Fig. 9-1.
When replacing the CRT assy, the anode cable have to be cut.

Note: Since the anode cables for the CRT assy to service supplies are only available in half lengths, either cut longer lengths, or join older lengths of cable to ensure that the original cable length is used.

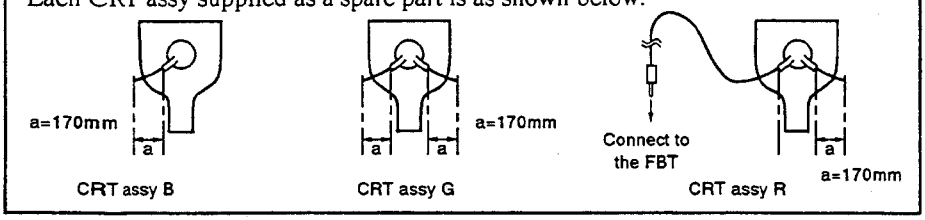
Table 9-1 Cable disconnecting methods

Cable	Replacement CRT assy		
	When CRT assy B is replaced	When CRT assy G is replaced	When CRT assy R is replaced
Cable ⓐ	——	——	Disconnect the anode cable from the FBT. (Refer to "Fig. 8-4 Disconnecting the anode cable"..)
Cable ⓑ	Leave it as is	Cut a place 40mm from the exact center towards the CRT assy G	Cut a place 40mm from the exact center towards the CRT assy R
Cable ⓒ	Cut a place 40mm from the exact center towards the CRT assy B	Cut a place 40mm from the exact center towards the CRT assy G	Leave it as is

Note: Do not cut other cables by mistake.

9.1 WHEN REPLACING THE CRT ASSY

Each CRT assy supplied as a spare part is as shown below.



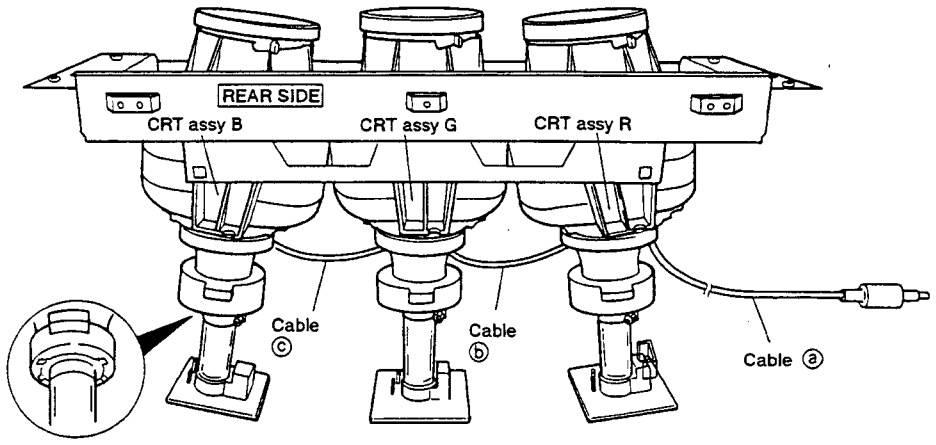


Fig. 9-1 Connection diagram of each CRT assy

9.2 ANODE CABLE SHEATH PEELING

- Peel the sheath of the end of cut anode cable and new anode cable.
- The anode cable structure is outlined in Fig. 9-2. Note that the sheath consists of two layers.
- The method used to peel the sheath back is illustrated in Fig. 9-3. Use a cutter knife, taking care not to damage the core leads.

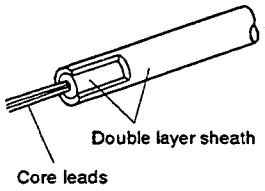


Fig. 9-2 Anode cable structure

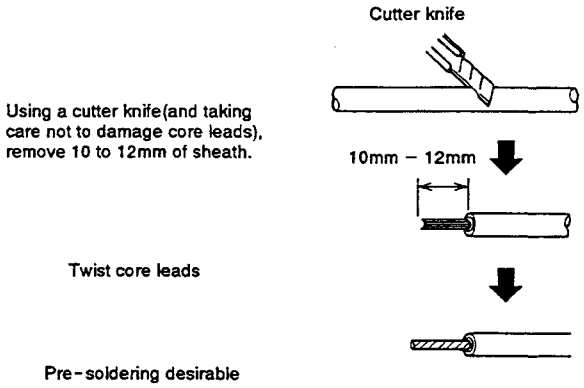

Cutter knife
Using a cutter knife(and taking care not to damage core leads), remove 10 to 12mm of sheath.
10mm – 12mm
Twist core leads
Pre-soldering desirable

Fig. 9-3 Anode cable sheath peeling

9.3 ANODE CABLE JOINING PROCEDURE

- Join the cut anode cable and the new anode cable to restore as shown in Fig. 9-1. Also, when replacing the FBT, refer to section 8.3 "Anode voltage measuring method"
- Slip two silicon tubes (silicon tubes A and B in Fig. 9-4) over the anode cables before making the join.
- The silicon adhesive is applied to guard the cable core leads from external air. Apply binder liberally. After completing the joint (at step ⑩ in Fig. 9-4-1 thru 3), check that there is no hole in the silicon binder and the tube interior cannot be seen.
- Leave the silicon adhesive to harden overnight.

CAUTION: For the silicon adhesive, be sure to use silicon adhesive part no. GYL-017.

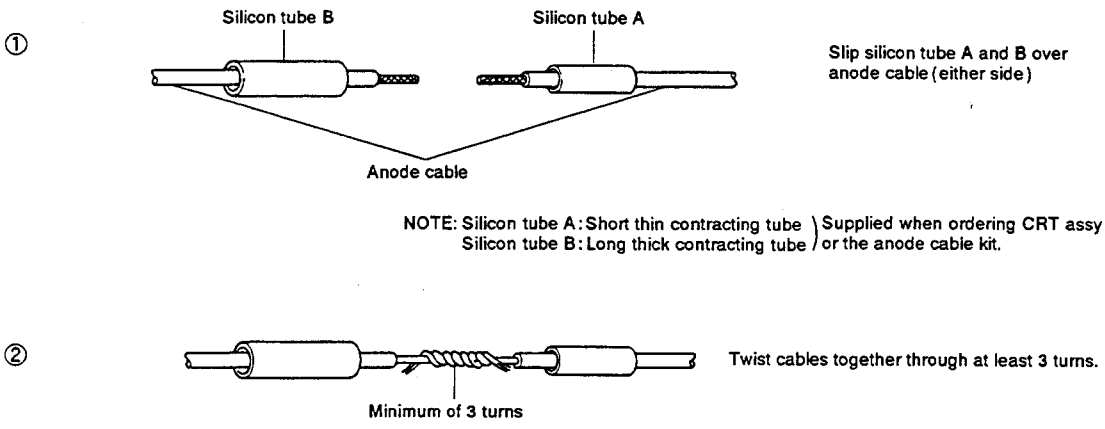
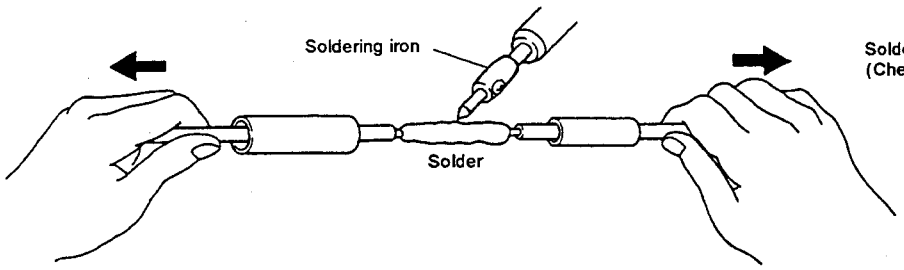

①
Silicon tube B
Silicon tube A
Slip silicon tube A and B over anode cable (either side)
Anode cable
NOTE: Silicon tube A: Short thin contracting tube
Silicon tube B: Long thick contracting tube
Supplied when ordering CRT assy or the anode cable kit.
②
Twist cables together through at least 3 turns.
Minimum of 3 turns

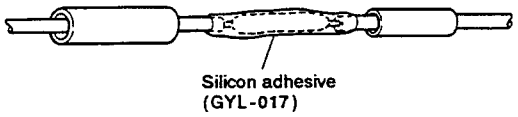
Fig. 9-4-1 Anode cable joining procedure (1)

③



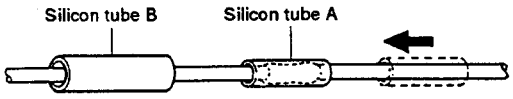
Solder the joint, and pull at both ends.
(Check against faulty soldering.)

④



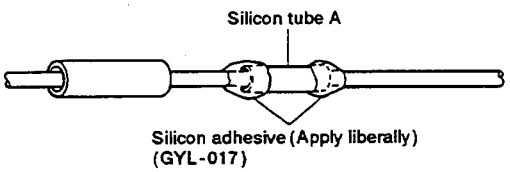
Apply silicon adhesive liberally.
(Cover the entire soldered section
and remaining bare core leads.)

⑤



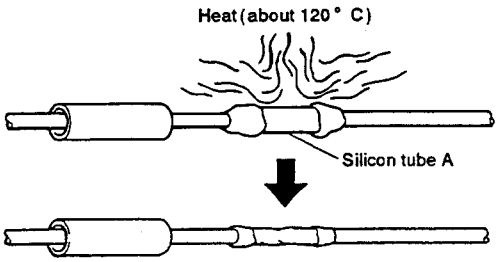
Cover the silicon adhesive section with silicon tube A.
(With the center of the silicon tube A corresponding
to the solder section)

⑥



Apply liberal amounts of silicon adhesive to
both ends of silicon tube A

⑦

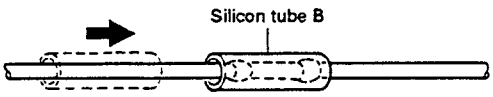


Apply heat (about 120° C) to contract silicon tube A.

Note: Use an industrial drier or soldering iron
as the heat source.

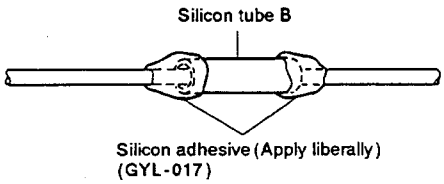
Check that the silicon adhesive has been applied
evenly without air pockets etc. If there are any
pockets etc, apply additional silicon adhesive.

⑧



Slip silicon tube B over silicon tube A.
(With the center of silicon tube B also
corresponding to the solder section)

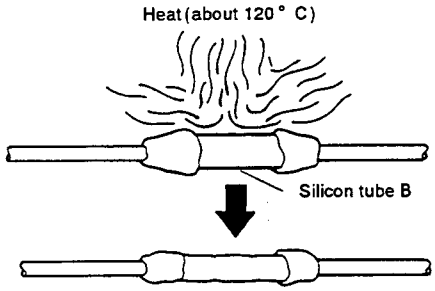
⑨



Apply liberal amounts of silicon adhesive
to both ends of silicon tube B.

Fig. 9-4-2 Anode cable joining procedure (2)

⑩

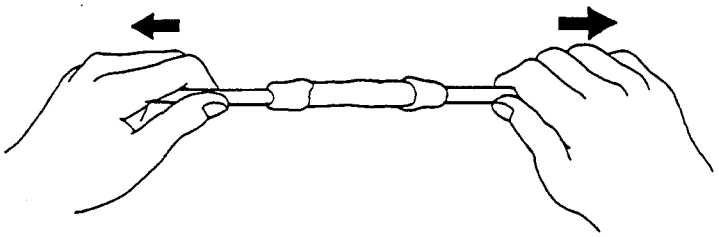


Apply heat (about 120 ° C) to contract silicon tube B.

Note: Use an industrial drier or soldering iron as the heat source.

Check that the silicon adhesive has been applied evenly without air pockets etc. If there are any pockets etc, apply additional silicon adhesive.

⑪



Gently tug both ends to check that the cables do not separate.

Fig. 9-4-3 Anode cable joining procedure (3)

10. HOW TO CLEAN

Note:
Cleaning liquid B4(GEM1004) for LD players is usable for projection TV display.

Jigs

Use the following for cleaning optical components such as lens, mirror and screen.

Name	Number
Cleaning cloth, MINIMAX	GED-009
Cleaning liquid, B4	GEM1004

Note: Wear gloves when holding optical components lest you should make fingerprints.

10.1 Method of Cleaning Lenses and Mirrors

1. Remove dust with an airbrush.
2. Apply some cleaning liquid to the cloth and wipe the dirt off with the cloth.
3. If the component is not so dirty, moisten it with breath and wipe it with the cloth.

Note: Wipe it softly lest you should scratch the lens.

10.2 Screen Cleaning

1. Apply the cleaning liquid to the above cloth or similar soft cloth and wipe the dirt off with the cloth.
2. Apply de-electrifier to the rear-surface or fresnellens side of the screen, or dust will stick on it.

Note:
(1) Apply no alcoholic liquid such as thinner and benzine to the front surface lest the black printing on the rear surface should come off.
(2) Use Ascetete-cloth tape, GYH1001, for sticking Fresnel lens and lenticular sheet together.

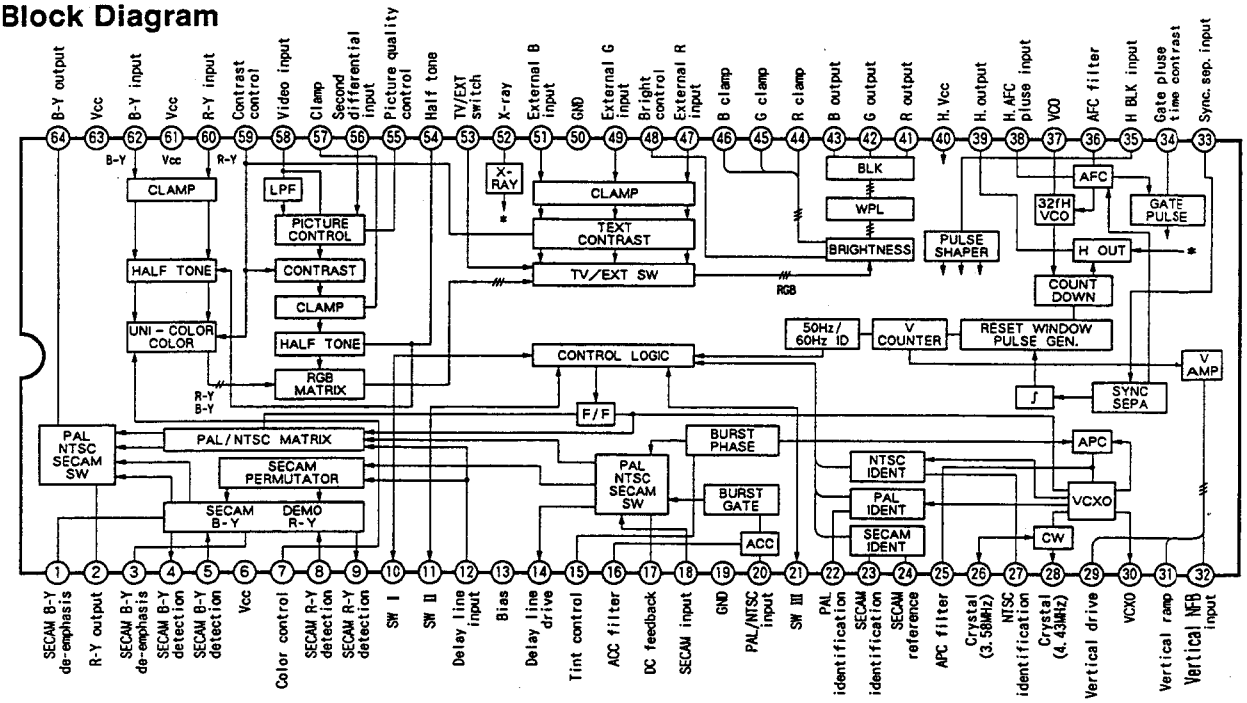
11. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■ TA8759BN (IC204)

• Multi Color Video Chroma & Deflection Processor

• Block Diagram



• Truth table

Logic table for AUTO mode

Identification			Crystal mode (MHz)	SW I	SW II	SW III	Discrimination mode
PAL	SECAM	NTSC					
Pin 22	Pin 23	Pin 27		Pin 10	Pin 11	Pin 21	
H	L	H	4.43	H	H	M	PAL
L	H	L	4.43	H	M	M	SECAM
L	L	H	4.43	L	H	M	4.43 NTSC
L	L	H	3.58	L	L	M	3.58 NTSC
L	L	L	4.43/ 3.58	L	M/L	L	B/W
H → Vcc L=6V			–	H=6.0V (1/2 Vcc) M=2.0V (1/6 Vcc) L=0V (Ground by 30k Ω) Output from IC.			–

Input voltages of the switches for MANUAL mode

Mode	SW I	SW II	SW III
	Pin 10	Pin 11	Pin 21
PAL	H	H	H
SECAM	H	(M)	H
4.43 NTSC	(L)	H	H
3.58 NTSC	(L)	(L)	H

H=6V ± 0.5V

Indicate ( ) are automatically set by IC when other pins are High.

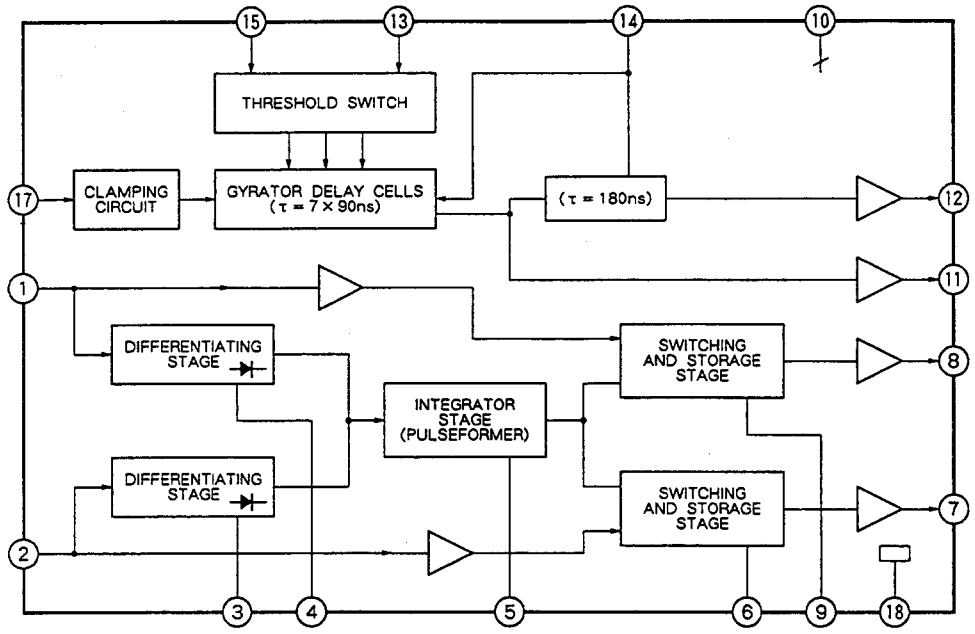
• Pin Function

No.	Pin Name	Function
1	SECAM B - Y de-emphasis	Connect a filter for SECAM de-emphasis.
2	R - Y output	Color difference signal output.
3	SECAM B - Y de-emphasis	Connect a filter for SECAM de-emphasis.
4	SECAM B - Y detection	Connect a tank coil for SECAM detection.
5		
6	Vcc	Power supply for Chroma system.
7	Color control	Color control terminal. Terminal voltage will be LOW when activating the color killer.
8	SECAM R - Y detection	Connect a tank coil for SECAM detection.
9		
10	SW I	Output the discrimination signal at AUTO mode and Input the forced signal at MANUAL mode. For the output at AUTO mode, refer to the logic table.
11	SW II	Output the discrimination signal at AUTO mode and Input the forced signal at MANUAL mode. For the output at AUTO mode, refer to the logic table.
12	Delay line input	1H delay signal of the PAL and SECAM color signal input.
13	Bias	DC bias of PAL and SECAM matrix circuit and SECAM permutator is applied via the Tint adjustment coil of delay line.
14	Delay line drive	PAL and SECAM color signal of 1H delay line output.
15	Tint control	Tint control terminal . Control for NTSC mode.
16	ACC filter	Connect a filter for ACC detection.
17	DC feedback	Connect a filter for DC feedback of the PAL and NTSC color signal amplifier.
18	SECAM input	SECAM color signal input. This terminal is combined with the discrimination signal output of 50 /60Hz as follows. 60Hz : High, 50Hz : Low
19	GND	Ground for chroma circuit.
20	PAL/NTSC input	PAL and NTSC color signal input. This terminal is combined with the change switch of SECAM IDENT.
21	SW III	Output the discrimination signal at AUTO mode and Input the forced signal at MANUAL mode. For the output at AUTO mode, refer to the logic table.
22	PAL identification	Connect a identification filter.
23	SECAM identification	Connect a identification filter.
24	SECAM reference	Connect a resonance coil for SECAM identification and it tuned with 4.328MHz.
25	APC filter	Connect a APC filter.
26	Crystal (3.58MHz)	Connect a crystal oscillator (3.58MHz) between pin 26 and pin 30.
27	NTSC identification	Connect a identification filter.
28	Crystal (4.43MHz)	Connect a crystal oscillator (4.43MHz) between pin 28 and pin 30.
29	Vertical drive	Vertical output.
30	VCXO	Connect the crystal oscilltor to pins 26 and 28.
31	Vertical ramp	Charges the external capacitor to the voltage determined by the external zener diode during the vertical retracing interval and discharges in the time constant of the external resistance and capacitor during the scanning interval to obtain ramp waveform.
32	Vertical NFB input	AC, DC feedback terminal of vertical output.
33	Sync. sep. input	Separation circuit of horizontal and vertical sync. signal input.
34	Gate pulse time constant	Connect the time constant for generating the gate pulse.
35	H BLK input	Blanking pulse input and sync signal output. This reshapes the pulse and switches the delay line drive, color difference output, blanking of RGB output and PAL switch. This also outputs masked sync signals during the period except for input blanking pulse periods and can be used to detect signals.
36	AFC filter	Connect a filter for H. AFC circuit.
37	VCO	32fH (503kHz) oscillation circuit is composed.
38	H. AFC pulse input	H. AFC circuit is composed.
39	H. output	H. output of duty 42%, 5.1Vp - p (typ.).
40	H. Vcc	Power supply for H. deflection circuit.
41	R output	R color signal output.
42	G output	G color signal output.
43	B output	B color signal output.
44	R clamp	Connect a clamp capacitor.
45	G clamp	Connect a clamp capacitor.
46	B clamp	Connect a clamp capacitor.
47	External R input	External R signal input.
48	Bright control	Brightness control terminal .
49	External G input	External G signal input.
50	GND	Ground for deflection and video systems.
51	External B input	External B signal input.
52	X - ray	Overvoltage protection circuit.
53	TV/EXT switch	Switch the TV signal, external RGB signal and BLK elimination.
54	Half tone	Half tone switch. This terminal is combined with WPS (White Peak Supress) change switch.
55	Picture quality control	Control terminal of picture quality adjustment. This terminal is combined with video mute and set the voltage of bright (pin 48) to 3V and TV mode less than 0.7V.
56	Second differential input	Second differential signal input.
57	Clamp	Connect a capacitor of pedestal clamp.
58	Video input	Video signal input.
59	Contrast control	Uni color control. Control the color gain simultaneously with video gain. Text contrast is common used.
60	R - Y input	R - Y Color differential signal input.
61	Vcc	Power supply for video, chroma and deflection systems.
62	B - Y input	B - Y Color differential signal input.
63	Vcc	Power supply for RGB output circuit.
64	B - Y output	Color difference signal output.

■ TDA4566 (IC202)

• Color Transient Improvement IC for TV

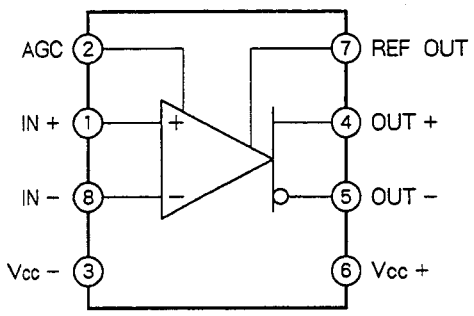
• Block Diagram



■ TL026CP (IC300)

• AGC Video Amp

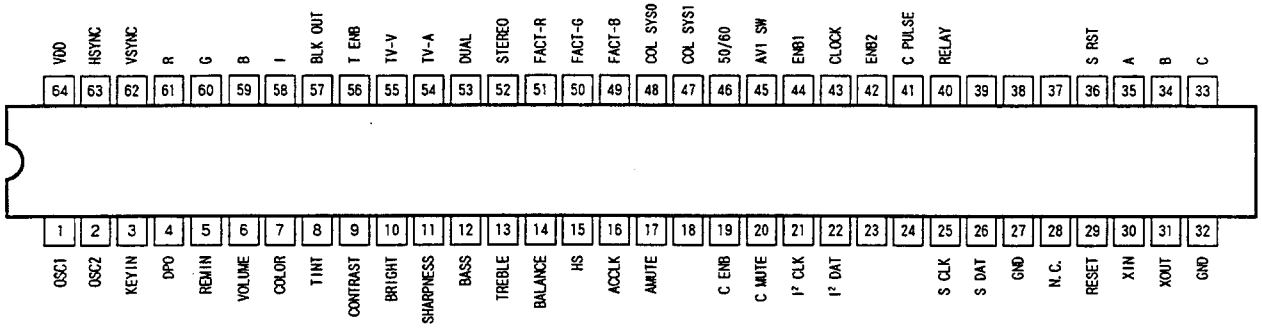
• Block Diagram



■ PD5220A (IC501)

• Microcomputer

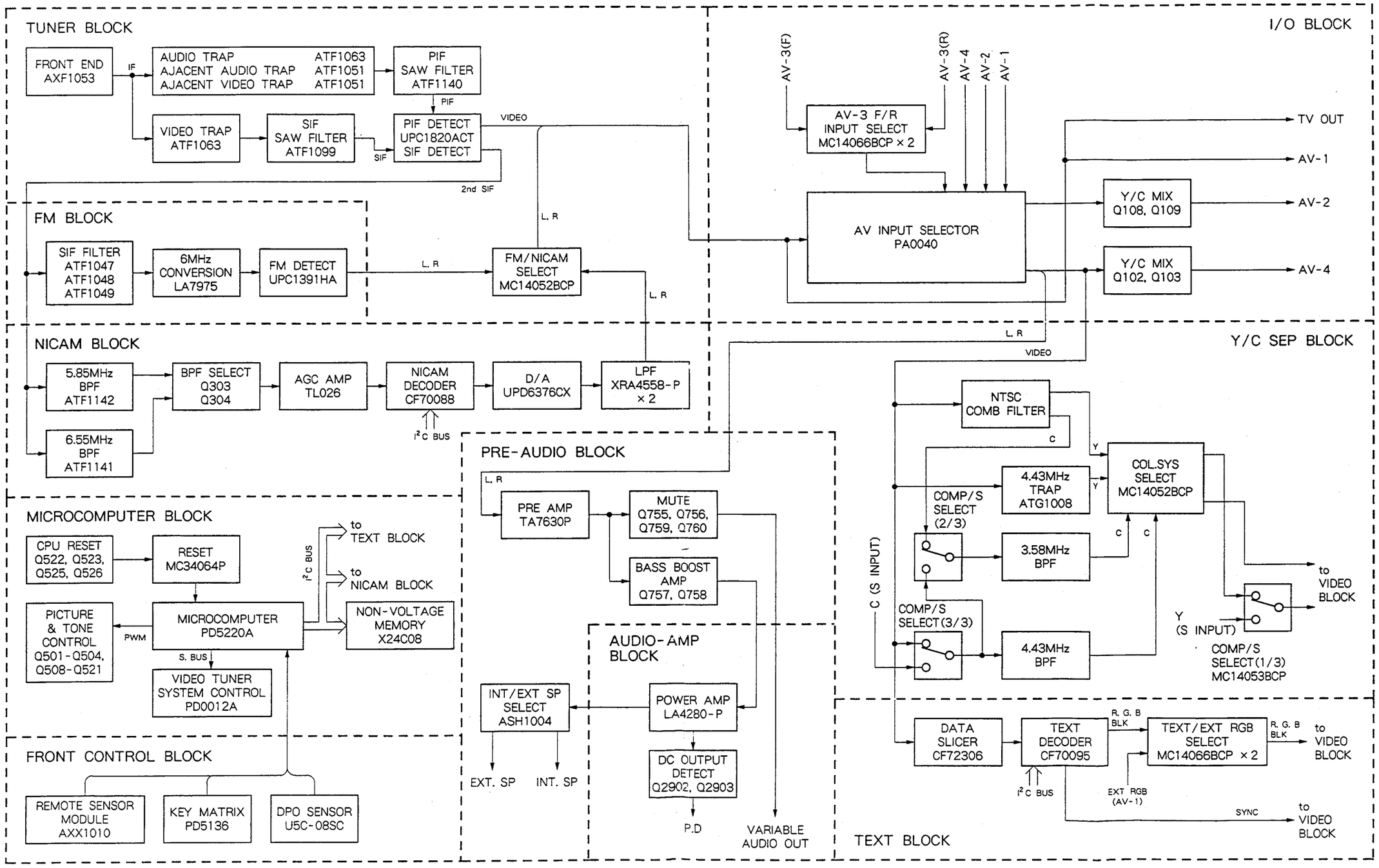
• Pin Arrangement (Top view)

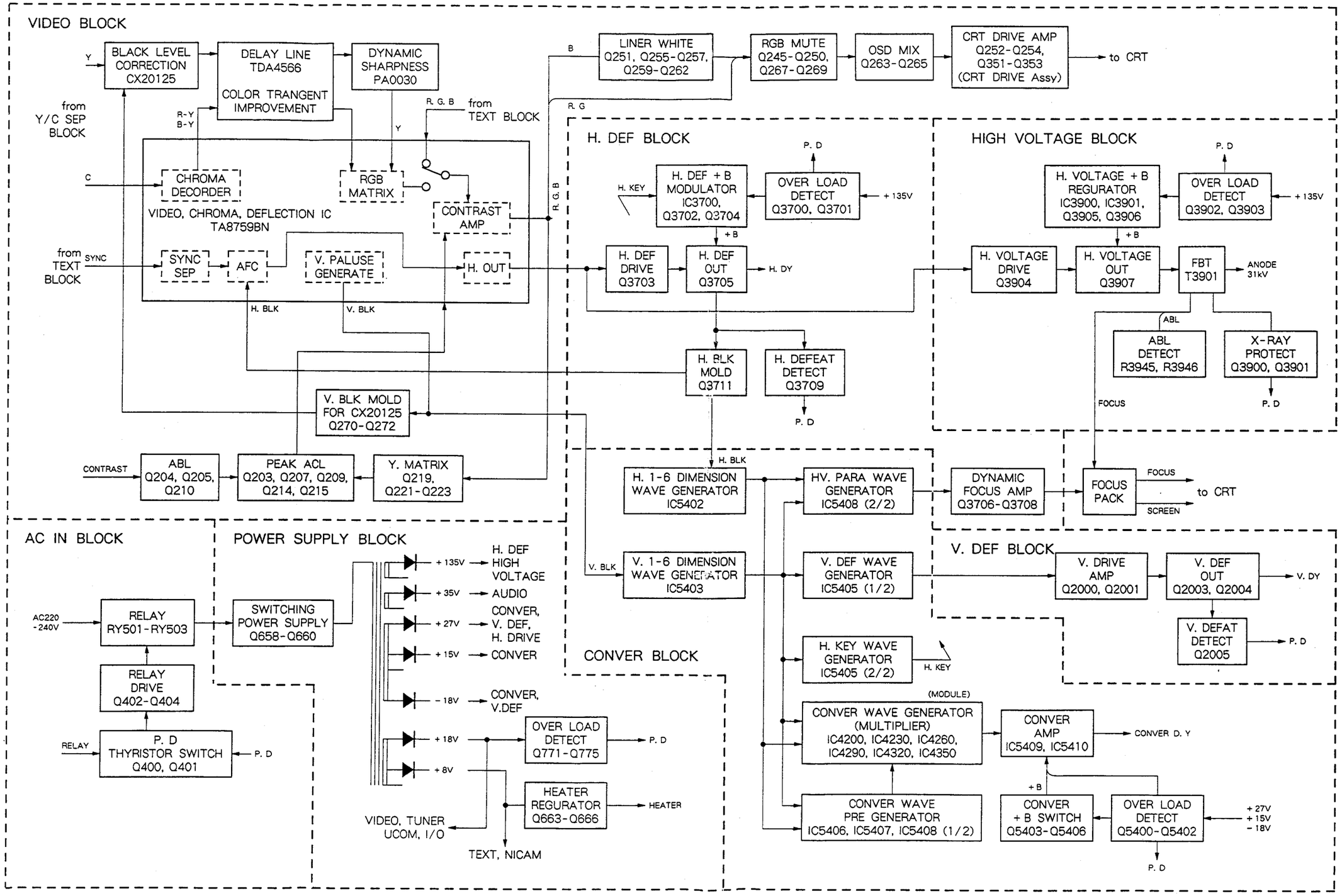


• Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	OSC1	–	Clock input / output for display.	32	GND	—	Connect to ground.
2	OSC2			33	C	I	Type discrimination input.
3	KEY IN	I	Main unit key code input.	34	B		
4	DPO		DPO input terminal. A – D input.	35	A		
5	REM IN		Remote control code input terminal.	36	SRST	O	I²C bus mute at standby. at standby : L , at ON : H
6	VOLUME	O	VOLUME control output. 14 bit PWM.	37	–	–	–
7	COLOR		COLOR control output. 8 bit PWM.	38			
8	TINT		TINT control output. 8 bit PWM.	39			
9	CONTRAST		CONTRAST control output. 8 bit PWM.				
10	BRIGHT		BRIGHT control output. 8 bit PWM.	40	RELAY	O	Relay output.
11	SHARPNESS		SHARPNESS control output. 8 bit PWM.	41	CPULSE	I	C PULSE detection at no signal.
12	BASS		BASS control output. 8 bit PWM.	42	ENB2	O	Expander ENB for tuner.
13	TREBLE		TREBLE control output. 8 bit PWM.	43	CLOCK	I	Color system detection input.
14	BALANCE		BALANCE control output. 8 bit PWM.	44	ENB1	O	Expander ENB for I/O.
15	HS	I	H sync counter. Decides a station exists or not exists. (For auto power off)	45	AV1 SW	I	Auto function input. Edge detection of H to L: AV – 1 (Function), Edge detection of L to H: TV (Function)
16	AC CLK		AC CLK counter. Use for detecting the AC power OFF. (AC power OFF when no AC clock is supplied for trhird times.)	46	50/60		Field frequency input.
				47	COL SYS1		Color system detection input.
17	A MUTE	O	Audio mute.	48	COL SYS0		
18	–	–	–	49	FACT – B	O	R, G, B MUTE.
19	C ENB	O	ENB for CONVER.	50	FACT – G		
20	C MUTE		CONVER mute.	51	FACT – R		
21	I²C CLK	I/O	I²C BUS CLK. } TEXT and NICAM controls.	52	STEREO	I	Audio multiplex mode input for Germany. at STEREO : L
22	I²C DAT		I²C BUS DATA. } EEPROM Read and Write.	53	DUAL		at DUAL : L
23	–	–	–	54	TV – A	O	TV audio mute.
24				55	TV – V		TV video mute.
25	S CLK	O	Serial I/O CLK. TUNER and CONVER controls.	56	TENB		ENB for tuner.
				57	BLKOUT		OSD BLK.
26	S DAT		Serial I/O DATA TUNER and CONVER controls.	58	I		OSD I (Decrease the test cross luminance.)
				59	B		OSD B.
27	GND		Connect to ground.	60	G		OSD G.
28	N.C.	–	–	61	R		OSD R.
29	RESET	I	Reset input.	62	VSYNC	I	V SYNC input terminal.
30	Xin	I	Main clock input / output.	63	HSYNC		H SYNC input terminal.
31	Xout	O		64	VDD	–	+5V power supply.

12. BLOCK DIAGRAM




VIDEO BLOCK
Y
BLACK LEVEL CORRECTION CX20125
DELAY LINE TDA4566
COLOR TRANGENT IMPROVEMENT
DYNAMIC SHARPNESS PA0030
from Y/C SEP BLOCK
R-Y
B-Y
R. G. B
from TEXT BLOCK
C
CHROMA DECORDER
RGB MATRIX
CONTRAST AMP
VIDEO, CHROMA, DEFLECTION IC TA8759BN
from TEXT SYNC BLOCK
SYNC SEP
AFC
V. PALUSE GENERATE
H. OUT
H. BLK
V. BLK
V. BLK MOLD FOR CX20125 Q270-Q272
CONTRAST
ABL Q204, Q205, Q210
PEAK ACL Q203, Q207, Q209, Q214, Q215
Y. MATRIX Q219, Q221-Q223
B
LINER WHITE Q251, Q255-Q257, Q259-Q262
RGB MUTE Q245-Q250, Q267-Q269
OSD MIX Q263-Q265
CRT DRIVE AMP Q252-Q254, Q351-Q353 (CRT DRIVE Assy)
to CRT
R. G
R. G. B
H. DEF BLOCK
H. KEY
H. DEF + B MODULATOR IC3700, Q3702, Q3704
OVER LOAD DETECT Q3700, Q3701
P. D
+ 135V
+ B
H. DEF DRIVE Q3703
H. DEF OUT Q3705
H. DY
H. BLK MOLD Q3711
H. DEFEAT DETECT Q3709
P. D
HIGH VOLTAGE BLOCK
H. VOLTAGE + B REGURATOR IC3900, IC3901, Q3905, Q3906
OVER LOAD DETECT Q3902, Q3903
P. D
+ 135V
+ B
H. VOLTAGE DRIVE Q3904
H. VOLTAGE OUT Q3907
FBT T3901
ANODE 31kV
ABL
ABL DETECT R3945, R3946
X-RAY PROTECT Q3900, Q3901
P. D
FOCUS
H. BLK
H. 1-6 DIMENSION WAVE GENERATOR IC5402
HV. PARA WAVE GENERATOR IC5408 (2/2)
DYNAMIC FOCUS AMP Q3706-Q3708
FOCUS PACK
FOCUS
SCREEN
to CRT
V. BLK
V. 1-6 DIMENSION WAVE GENERATOR IC5403
V. DEF WAVE GENERATOR IC5405 (1/2)
V. DEF BLOCK
V. DRIVE AMP Q2000, Q2001
V. DEF OUT Q2003, Q2004
V. DY
V. DEFAT DETECT Q2005
P. D
H. KEY WAVE GENERATOR IC5405 (2/2)
H. KEY
CONVER BLOCK
(MODULE)
CONVER WAVE GENERATOR (MULTIPLIER) IC4200, IC4230, IC4260, IC4290, IC4320, IC4350
CONVER AMP IC5409, IC5410
CONVER D. Y
CONVER WAVE PRE GENERATOR IC5406, IC5407, IC5408 (1/2)
+ B
CONVER + B SWITCH Q5403-Q5406
OVER LOAD DETECT Q5400-Q5402
+ 27V
+ 15V
- 18V
P. D
AC IN BLOCK
AC220 - 240V
RELAY RY501-RY503
RELAY DRIVE Q402-Q404
RELAY
P. D THYRISTOR SWITCH Q400, Q401
P. D
POWER SUPPLY BLOCK
SWITCHING POWER SUPPLY Q658-Q660
+ 135V
H. DEF HIGH VOLTAGE
+ 35V
AUDIO
+ 27V
CONVER, V. DEF, H. DRIVE
+ 15V
CONVER
- 18V
CONVER, V.DEF
+ 18V
OVER LOAD DETECT Q771-Q775
P. D
+ 8V
HEATER REGURATOR Q663-Q666
HEATER
VIDEO, TUNER UCOM, I/O
TEXT, NICAM

13. WIRING DIAGRAM

Reconnect any disconnected lead wires of the Projection monitor receiver.
Figs. 13-1 show the important points for connection of the lead wires. You may find that they were connected differently. Be sure reconnect the lead wires as they were.

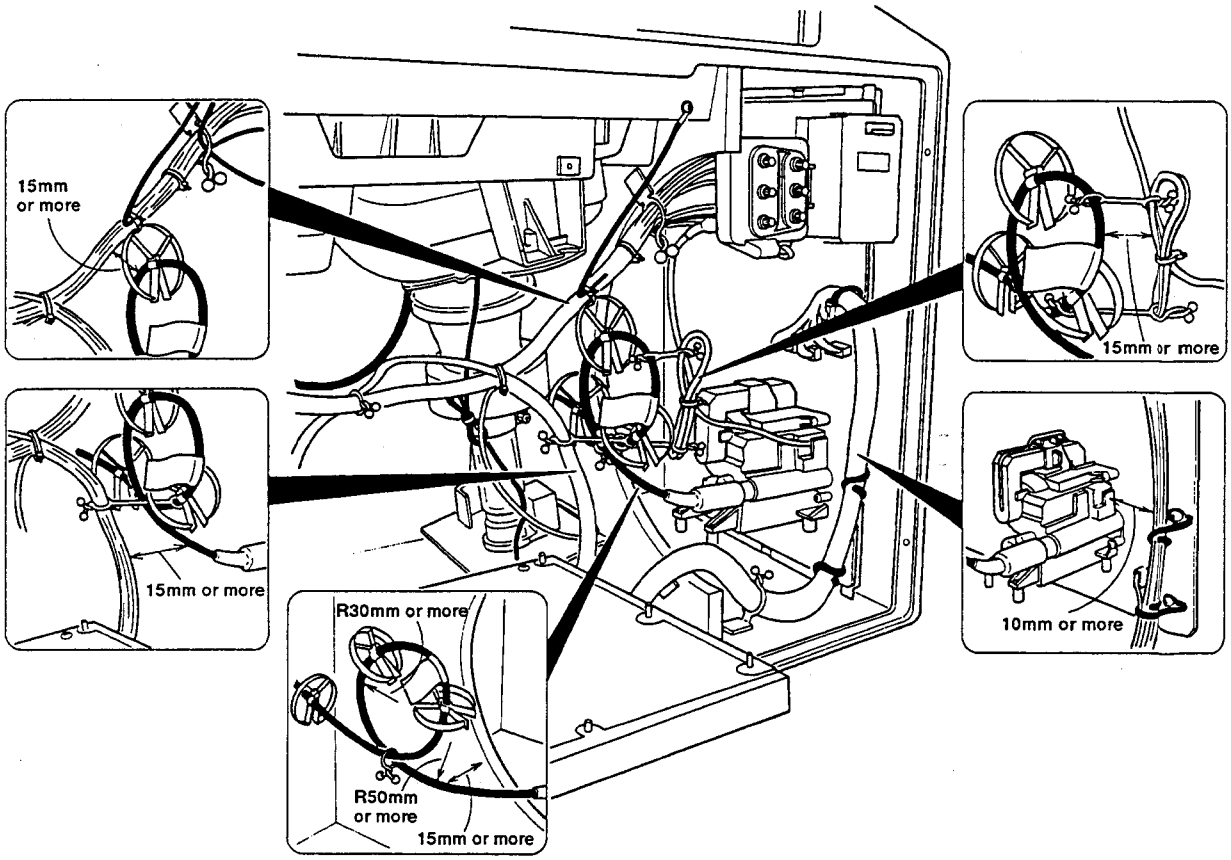
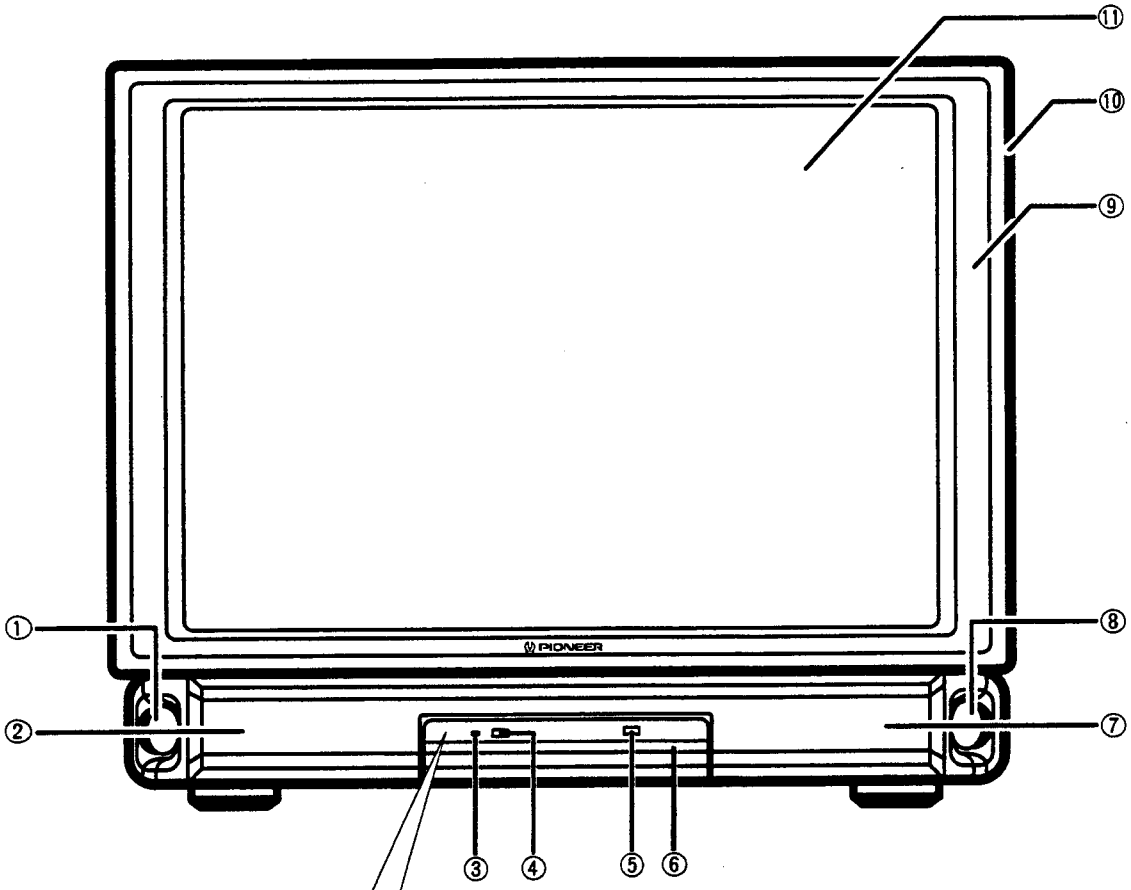
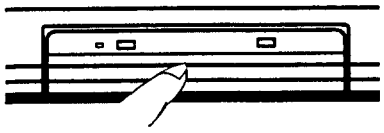


Fig. 13-1 Wiring diagram

14. PANEL FACILITIES



A flip-down door conceals the control panel. Push gently and release to open the door.
To close the door, lift it back up into place.



NOTE:

- *If you accidentally pull the door open, it may not shut properly. Push in when shutting the door to restore it to normal operation.*

① **Speaker Duct (Left channel)**
② **Speaker (Left channel)**
③ **Power Indicator**
④ **DPO (Dynamic Picture Optimizer) Sensor**
⑤ **Remote Sensor**
⑥ **Control panel door**
⑦ **Speaker (Right channel)**
⑧ **Speaker Duct (Right channel)**
⑨ **Screen Frame**
⑩ **Cabinet**
⑪ **Screen**

Attention:

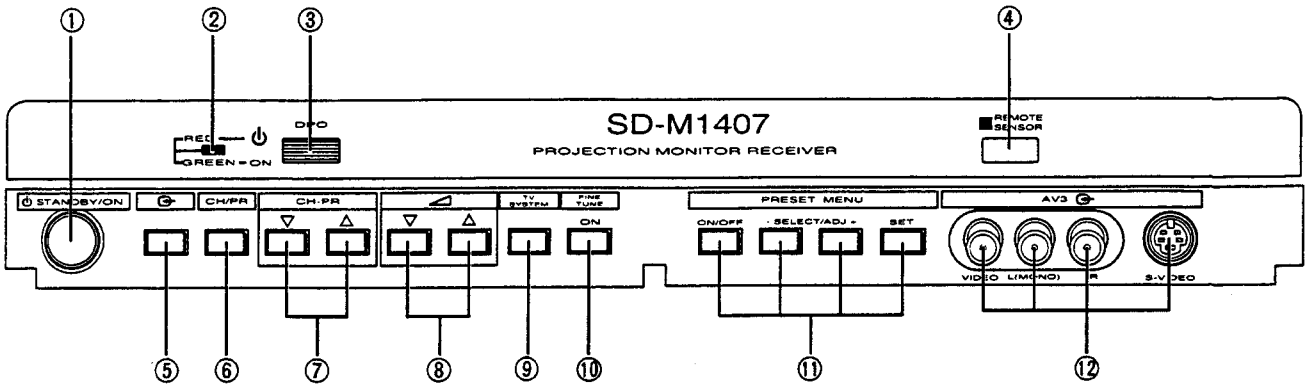
- To prevent damage to the internal left and right speakers or bad sound reproduction, do not insert any foreign objects (a ball, etc.) into the left and right speaker ducts.
- The Projection TV will not function properly in the following cases:
  - Lightning storms.
  - High static electricity environment.
  - Poor voltage regulation in the power source.

If the Projection TV does not operate properly, reset it as follows:

① Unplug from the power supply for approximately 1 minute.
② Plug the power cord in again to reset it.

Some memorized modes such as the last memorized mode may be erased when resetting the Projection TV.

Inside of the control panel door



① ⏻ STANDBY/ON Button
Press once to turn on the power (the STANDBY/ON indicator ② turns green). Press again, to set to standby mode (the STANDBY/ON indicator ② turns red).

ON: When set to the ON position, power is supplied and the unit becomes operational.

STANDBY: When set to the STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness.

② ⏻ STANDBY/ON Indicator
The red indicator is lit when the Projection TV is in the standby mode, and lit green when it is in power on mode.

③ DPO Sensor
This sensor detects ambient lighting for the DPO (Dynamic Picture Optimizer) circuit which adjusts the TV picture accordingly.

④ Remote Sensor
This sensor picks up infrared signals from the remote control unit.

⑤ ⊖ (Input Selector) Button
Press to select INPUT source. INPUT sources will change as follows: TV, AV-1, AV-2, AV-3, AV-4. Even when TV, AV-2, AV-3 or AV-4 is selected, if the switching voltage is received from AV-1 (EURO-AV socket ⑧ pin), the input selector switches to AV-1.

⑥ CH/PR (Channel/Program) Button
Press to switch between the channel and the program number tuning functions.

⑦ CH-PR (Channel-Program) △ / ▽ Buttons
Press up (△) or down (▽) to tune to a higher or lower channel or program. Only those programs in STATIONS STORING can be tuned in by this method.

⑧ ◁ (Volume) Buttons
Press the up (△) or down (▽) button to raise or lower the volume.

⑨ TV SYSTEM Button
To select TV system, B/G, D/K or I during TV reception and to select channel table.

⑩ FINE TUNE Button
Press to turn the fine tuning function on and off. Press the PRESET MENU SELECT/ADJ +/— buttons after turning on the fine tuning function if you wish to finely adjust the tuning.

⑪ PRESET MENU Buttons
These buttons are used to perform the following presetting operations: color convergence adjustment, AV memory storing, DPO adjustments, Video mode settings, Color system setting, Sound system setting, TV stations storing and System mode setting. For details, refer to the description of each function.

ON/OFF: Press to turn the operation menu on and off. When the operation menu is turned on, CONVERGENCE, AV MEMORY, DPO BASE, VIDEO SYSTEM, COLOR SYSTEM, SOUND SYSTEM, STATIONS STORING and SYSTEM MODE will appear on the screen.

SELECT/ADJ: Press to select or adjust each of the above operations. The selected item will turn red on the screen.
These buttons are used as channel select buttons when the stations storing operation is engaged.

SET: Press to store the setting after adjusting or selecting an item.

⑫ AV3 ⊖ (Input) Jacks (for playback)
Connect to additional equipment such as a video cassette recorder or LD player.

S-Video (Separate-Video input): If you attach additional equipment to this jack, use an optional S-Video connection cord.

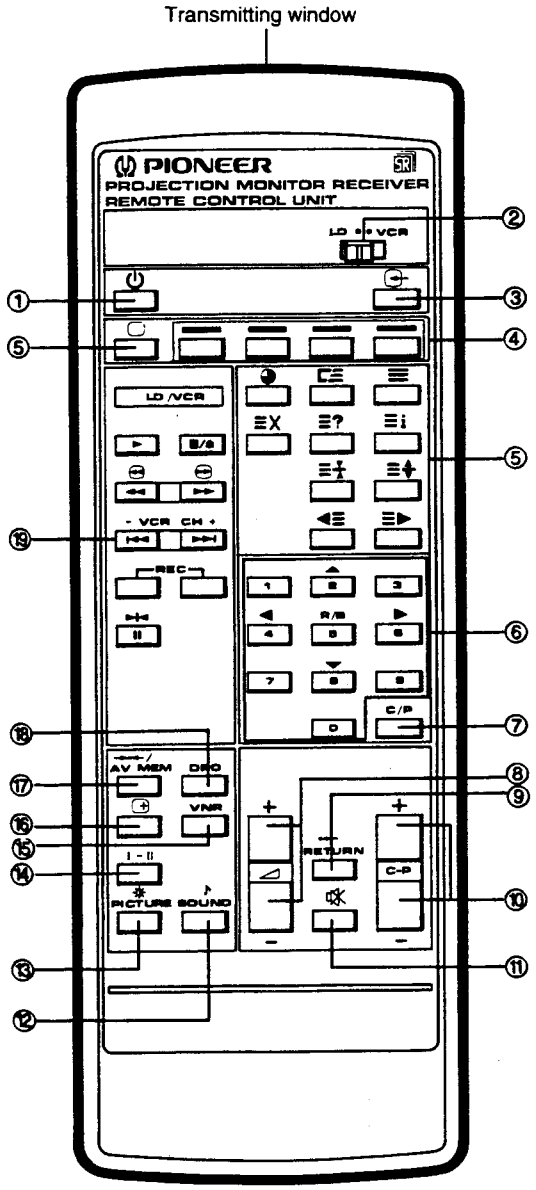
VIDEO (Video input): Connect to the video output jack of your equipment.

> ***NOTE:***
> *AV-3 input jacks are located on both the front and rear panel, and you can select them for connections accordingly. Refer to page 30 for details.*

NOTE:
Use only one of the input jacks (S-Video or VIDEO) for connection. Video input signal cannot be selected if both the S-Video and VIDEO input jacks are connected at the same time.

L (MONO), R (Left and Right Audio inputs): Connect to the left and right channel output audio jacks of your equipment. If your equipment is a monaural audio system, use only the L (MONO) jack for audio connection.

REMOTE CONTROL UNIT



① Standby Button (⏻)
Press to turn the Projection TV to STANDBY.

② LD .. VCR Switch
(PIONEER LaserDisc/PIONEER Video Cassette Recorder)
To select the remote control function mode of the LD/VCR remote control buttons; either LD or VCR.

③ Input Selector Button (⇒)
Press to select the external video source you wish to watch.

TV → AV1 → AV2 → AV3 → AV4

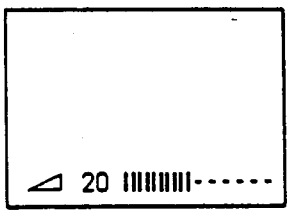
④ Green, Yellow, Blue and Red Colored Buttons
Press to select pages for the FASTEXT.

⑤ Teletext Operation Buttons and Teletext Cancel (○) Button
Press to select teletext operations.
Press the ○ button to cancel the Teletext function.

⑥ Numeric Buttons (0 to 9)/ Power ON
Press to select a TV channel or program directly. While Teletext is engaged, press to select Teletext page you wish to search. If the power is off, pressing these buttons turns the power on.
2 (▲ : Up), 4 (◀ : To the left), 5 (R/B : To select Red or Blue), 6 (▶ : To the right) and 8 (▼ : Down) buttons are used to adjust color convergence when the convergence adjustment mode is engaged.

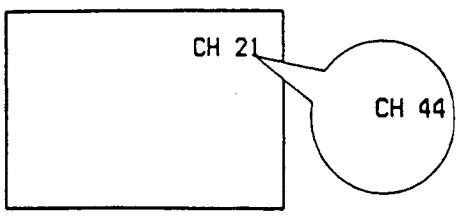
⑦ C/P (Channel/Program) Button
Press to select either channel number or program number when tuning to a television broadcast.

⑧ ◿ (Volume) +,−/Adjust +,− Buttons
Press the + button to increase the volume, and the − button to decrease it.
Volume adjustment will appear on the screen as numbers and a bar-graph. '63' indicates the maximum volume level. The display will disappear from the screen after 4 seconds.
Adjustments for SOUND items (bass, treble and balance) or PICTURE items (color, tint, contrast, brightness and sharpness) can also be made.
First press the SOUND or PICTURE button the necessary number of times to select the item to be set.
Then adjust the level using the (+) and (−) buttons.

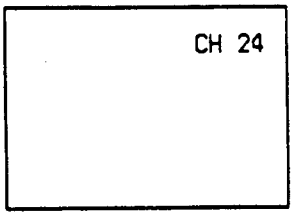


NOTE:
- *When using this button to control the volume after having used it for the Adjust function, make sure that the picture or sound adjustment display has disappeared.*
  This button will operate as the picture or sound adjustment as long as a picture or sound adjustment display appears on the screen.

⑨ RETURN Button (↩)
Press to switch between the current channel or program and the channel or program you were watching immediately before. This is useful, for example, if you wish to switch back and forth between two sporting events.



⑩ C-P (Channel - Program) +, − Buttons
Press the C-P (+) or C-P (−) to scan up or down among the channels or programs.



⑪ (Mute) Button
Press to temporarily turn off the sound, and again to return to the previous volume level. This is useful, for example, when you get a phone call.
The (Mute) display will appear in red while mute is engaged.
If the mute function is left on for over approx. 8 minutes, the function will be cancelled automatically, and the volume level will be reset to 0.
The mute display will disappear from the screen when the mute is cancelled.

⑫ SOUND Button (♪)
Press to select the sound parameter to be adjusted.

(Bass) → (Treble) → (Balance)

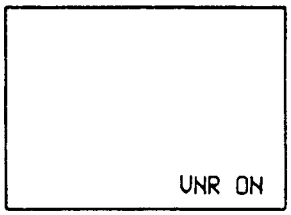
⑬ PICTURE Button ( )
Press to select the picture parameter to be adjusted. The display will appear on the screen if the NTSC or 4.43 NTSC color system is selected by pressing the PRESET MENU SELECT/ADJ button. Tint display will appear on the screen while NTSC or 4.43 NTSC signal is played back when AUTO color system mode is selected. (See preset menu operation "SELECTING THE COLOR SYSTEM".)
- The Tint adjustment is possible when the input signal is the NTSC or 4.43 NTSC.

(Color) → (Tint) → (Contrast)
(Sharpness) ← (Brightness)

⑭ I-II (TV Sound Mode) Button
Press to select the reception TV sound mode.
The switching sequence is as follows.

DUAL I → DUAL II
DUAL I /II

⑮ VNR (Video Noise Reduction) Button
You can turn VNR on or off as desired. When VNR is on. the noise on the screen is reduced.

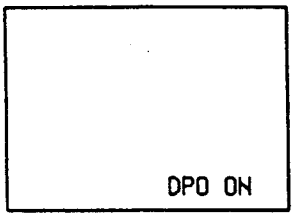


⑯ (Display) Button
Press once to display the current channel and other information on the screen.

⑰ /AV MEM (Standard/AV Memory) Button
Press to switch between the standard (STD) picture/sound quality settings and your AV MEMORY 1, 2, 3, 4 and S-BRITE settings.
This button only recalls settings stored in AV MEMORY. To put the current picture/sound settings into AV MEMORY, use the control panel PRESET MENU buttons.

STANDARD → AV MEMORY 1 → AV MEMORY 2
↑ ↓
DISPLAY OFF
(Temporary memory mode)
↑ ↓
S-BRITE ← AV MEMORY 4 ← AV MEMORY 3

⑱ DPO (Dynamic Picture Optimizer) Button
You can turn DPO on or off as desired. When DPO is on, it automatically adjusts the picture to compensate for room illumination.



⑲ LD/VCR (LaserDisc/Video Cassette Recorder) Operation Buttons
Press to operate a PIONEER LD player or video cassette recorder.

Control buttons for a PIONEER LD Player and VCR

If your LD (LD Player) or VCR is a PIONEER model, your Projection TV's remote control unit can perform most of the basic operations. The LD/VCR switch is used to select whether the remote control unit operation buttons will function as LD player or VCR control buttons.

PIONEER LD Player Control

Turn on your LD player before operating.

① **Set the LD/VCR switch to LD.**

② **Press the ⊖ button repeatedly to set the input selector to the AV connector/terminal to which the LD player is connected.**

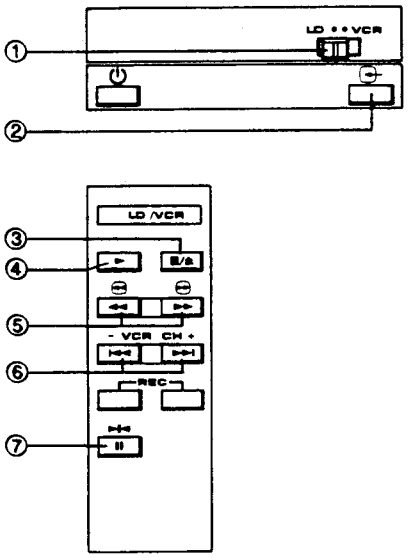
③ **Stop/Eject (■/⏏) button**
Press once to stop playback, twice to eject the disc.

④ **Play (▶) button**
Press to begin playback.

⑤ **Scan (⊖ / ⊖) button**
Press the ▶▶ side of the button to search in the forward direction while playing the videodisc.
Press the ◀◀ side of the button to search in the reverse direction while playing the videodisc.

⑥ **Chapter Skip (⏮/⏭) button**
Press the ⏭ side of the button to skip directly to beginning of the next chapter, press the ⏮ side to skip directly back to the beginning of the chapter currently in play. This operation can only be performed on an LD Player with a chapter skip function.

⑦ **Pause/Still (II/▶⏮) button**
Temporarily interrupts playback.



PIONEER VCR Control

Turn on your VCR before operating.

① **Set the LD/VCR switch to VCR.**

② **Press the ⊖ button repeatedly to set the input selector to the AV connector/terminal to which the VCR is connected.**

③ **Stop/Eject (■/⏏) button**
Press once to stop playback, twice to eject the tape.
* Eject function will be performed only if your VCR is equipped with the remote control eject function.

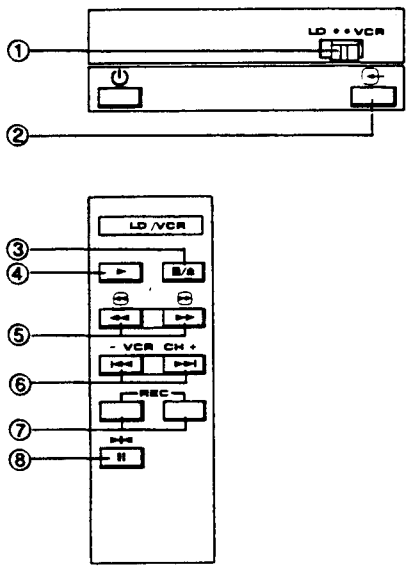
④ **Play(▶) button**
Press to begin playback.

⑤ **Rewind/Fast Forward (⊖ / ⊖) button**
This button allows high-speed movement through parts of the tape that you don't wish to watch. Press the left side of the button to rewind the tape, and the right side to advance.
During playback, use this button to search visually forward or backward.

⑥ **VCR CH (Channel) +/– button**
Press to select the channel of the TV tuner on the VCR.

⑦ **REC (Record) buttons**
Press both buttons at the same time to start recording.

⑧ **Pause/Still (II/▶⏮) button**
Temporarily interrupts recording or playback, producing a still picture during playback.



15. SPECIFICATIONS

DISPLAY SECTION

Reception system ..... PAL, NTSC, NTSC 4.43
Screen size ..... 40"
CRT ..... 7" CRT x3
Actual viewing angle ..... Horizontal H = 140°
Vertical V = 50°
Input terminals.....2 Scarts (1: with AV output, 1: with TV output)
2 AV Cinch
2 Y/C plug
Output terminals ..... 1 AV Cinch
1 TV output (Cinch)
1 Variable audio output (Cinch)
Input signal .....Video signal: 1.0 Vp-p ±3 dB

Input impedance ..... Video input: 75 ohms ±10%
Audio input: 10 kohms or more
Input signal polarity ..... Synchronized negative
Output terminal signal ratings:
Output terminals ..... Video signal: 1 Vp-p (75 ohms load)
Audio signal: 500 mV rms (100% modulation)
Output impedance ..... Video output: 75 ohms ± 10%
Audio output: Less than 1 kohms

TUNER SECTION

Circuit type .....Video signal detection:
PLL detection
PLL Digital Synthesizer system
Audio multiplex: NICAM
Reception channels .....VHF; CH2 – CH12, UHF; CH21 – CH69
CATV; CH E2 - CH S20,
Italy; CH A - CH H2
New Zealand; CH1 - CH11
OIRT; R1 - R12
China; CH1 - CH57
Australia; CH0 - CH11
Ireland; A - J
HYPER; S1 - 70
Belgium; X - U5
Antenna terminal ..... ANTENNA terminal,
TV coaxial 75 ohms UNBAL

AMPLIFIER SECTION

Tone control ..... BASS, TREBLE
Built-in speaker system .....12 cm mid-low range ×2
6 cm high range ×2
External speaker impedance ..... 8—16 ohms

ELECTRICAL SECTION, MISCELLANEOUS

Power requirements .....a.c. 220—240 Volts ~, 50/60 Hz
Power consumption.....300 W
External dimensions..... 1,002 (W)×556 (D)×824 (H) mm
Weight of main unit..... 56 kg

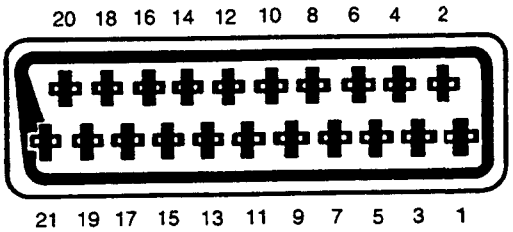
WIRELESS REMOTE CONTROL UNIT

Operation System: Infrared remote control system
Power source: Two IEC R6 (UM-3, "AA") 1.5 V dry cell batteries

ACCESSORIES

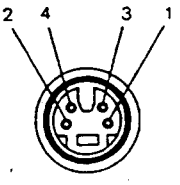
Operating instructions 1
Remote control unit 1
IEC R6 (UM-3, "AA" size) dry cell batteries 2
Power cords 2

Assignment of connections for EURO-AV sockets



EURO-AV1	EURO-AV2
1 Audio output B	1 Audio output B
2 Audio input B	2 Audio input B
3 Audio output A	3 Audio output A
4 Audio ground	4 Audio ground
5 Blue ground	5 —
6 Audio input A	6 Audio input A
7 Blue	7 —
8 Switching voltage	8 —
9 Green ground	9 —
10 —	10 —
11 Green	11 —
12 —	12 —
13 Red ground	13 —
14 —	14 —
15 Red or chroma signal with S-Video	15 Chroma signal with S-Video
16 Blanking signal	16 —
17 Video output ground	17 Video output ground
18 Video input ground	18 Video input ground
19 Video output	19 Video output
20 Video input or luminance with S-Video	20 Video input or luminance with S-Video
21 Screening or ground	21 Screening or ground

Assignment of connections for S-VIDEO socket



1 Ground	3 Luminance
2 Ground	4 Chroma signal

NOTE:
Specifications and design subject to possible modifications without notice due to improvements.

PIONEER®

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